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VOLUME V. FEBRUARY, 1935. PART I.

SIR JOHN ADAMS.

BY P. B. BALLARD.

THE year 1897 stands out as a landmark in English education, for in that year appeared a little book which in its own world was destined to make history. Its cover bore the forbidding and indeed misleading title of *The Herbartian Psychology applied to Education*; misleading because it suggested a tome of Teutonic dulness, whereas in truth the only dull thing about it was its title. The text itself was as lively as anyone could wish. It struck a new note in educational literature. Instead of the stiff dignity of an academic treatise one found a free and easy style, virile, racy, and eminently readable. Quotations from the novelists and the poets were more frequent than from the philosophers. And yet with all its humanity and its humour, its suavity and its charm, the book was imbued throughout with a resolute spirit of reform. It had in it enough fire and force to change the whole trend of educational thought in this island. The author of the book was John Adams, Rector of the Free Church Training College at Aberdeen.

To understand its peculiar influence it is necessary to recall the prevailing theories of the period. In the last decade of the Nineteenth Century the realm of educational theory was comparatively stable and tranquil. It was tranquil because there was virtual agreement among the recognized leaders. They all seemed to believe the same things. It is certain that they all took for granted the same central theory. They regarded the mind as a set of faculties which, given a suitable series of exercises, could be indefinitely improved in any direction. They belittled the importance of knowledge and extolled the importance of intelligence. To them the capacity of the mind was everything; its contents comparatively nothing. And its capacity was believed to be independent of its contents. A trained mind was a trained mind whatever the material it was trained on. It was true that some studies trained it better than others; but the value of those studies did not lie in the message they delivered nor yet in their utility for the purposes of human life, but in their efficiency as mind-stretchers. And those in high places never for a moment doubted that mind-stretching was a possible process.

In other words the doctrine of formal discipline was dominant and supreme. It was accepted as self-evident. The view that a man's mind is not a receptacle for facts but an instrument for dealing with facts—

facts of any kind or any description—was so pleasant as a pious opinion that nobody dared to carp at it as a strict scientific truth. Nor yet at the deduction that the educator should mainly concern himself with the various powers or faculties of the mind rather than the medium in which the mind worked.

Many were the guises in which the doctrine of formal discipline appeared. It appeared as maxims or slogans, such as: "It does not matter what you teach so long as you train the mind"; or, "The *what* of teaching is of no consequence; it is the *how* that is important"; or, "Education is what is left when one has forgotten all one has learnt at school." It appeared as a tacit assumption that the exercise of any one function of the mind benefited the mind as a whole; or, if not the mind as a whole, a certain large department of the mind within which the function was supposed to fall; departments which were given such names as observation, imagination, and reason. The doctrine appeared as a belief that mental power gained in doing one particular kind of mental work was available for any other kind of mental work; or that it was possible, as Mr. Bernard Shaw put it, to learn to do one thing by doing something else. Later on, when the self-same doctrine was put to the test of psychological experiment, it became known to some as the transfer of training, and to others as the overflow of ability. But in the Nineteenth Century it had scarcely a name at all; and for that reason was all the more insidious and dangerous. Being all-pervading it escaped notice, as the atmosphere escapes notice.

We were all in those days formal trainers of some kind—we the enlightened ones that is. The vulgar held a different creed. They stubbornly clung to the belief that things should be taught in school because they were useful. A few held the dreadful heresy that a school subject was none the worse for being agreeable. But if these heresies spread what was to become of the grand old fortifying curriculum?

The current text-books on educational psychology, the most reputable of which were Sully's and Lloyd Morgan's, were, to speak truly, of little service either to psychology or to education. Their psychology was scarcely on speaking terms with education, and their education scarcely on speaking terms with the classroom. And if the authors did not discuss the problem of formal training it was probably because they were unaware that there was any problem to discuss. Even if they had discussed it it wouldn't have mattered much; Sully's book at any rate was far too dull to be dangerous.

Into this atmosphere of complacency fell John Adams's book like a bolt from the blue. It made an attack on the central citadel; not a

frontal attack of stark affirmation and denial, but a subtle side attack of irony and implication, aided by an appeal to common sense and the cold logic of facts. Its main line of assault took the form of a *reductio ad absurdum*. If the training of faculties was the be-all and end-all of education, and the medium of training of no importance, then crime could not be denied a place of honour in the school curriculum. Listen to this :

" What could call into play more of a boy's faculties than orchard-robbing? Almost all the virtues are trained in the exercise of this vice. The necessary planning demands prudence, forethought, caution. The choosing of the right moment implies careful observation, judicious estimate of character, and intelligent calculation of probabilities. The actual expedition demands the greatest courage, firmness, self-control. Climbing the tree and seizing the fruit are only possible as the result of the most accurate adjustment of means to end. All the results aimed at in the most liberal intellectual education are here secured ; no teacher is required ; and the boy enjoys it. Why does not apple-stealing rank with Latin and Mathematics as a mental gymnastic? " [1]

Then we are introduced to Fagin's school by a report supposed to be written by an emancipated inspector of schools who has enlightened views on the relation between education and crime. Here is an extract : " Object lessons are well attended to : one of the senior pupil-teachers, William Sikes, deserving special praise for his effective lesson on the loading of a pistol and the connection between a loaded pistol and holding one's tongue."

Adams then tackles the question of Observation, about the training of which everybody was in those days much concerned. From platform and press came a stream of complaints that children in the schools were taught to pick up second-hand knowledge, but were not taught to observe. The heaven-born faculty of Observation, the faculty by which all human knowledge was ultimately acquired, was left to rust unused. In view of these complaints object lessons assumed a tremendous importance in the school régime. Not only did they bulk large in the curriculum of every self-respecting school, but they became the lessons on which the efficiency of teachers in training was usually judged. For these lessons notes had to be prepared beforehand. And at the head of the notes it had to be specifically stated that the aim of the lesson was " to cultivate the faculty of Observation."

All this solemn nonsense was blown to bits by Adams's chapter on The Meaning of Observation. The author showed how absurd it was to

[1] *The Herbartian Psychology applied to Education*, Chap. V.

try to form a scatter-brained habit of attending to anything and everything that the eye could see or the ear could hear. Taking Sherlock Holmes as a typically observant person he showed that the great sleuth's supposed observation was mainly inference, and that what genuine observation there was took place in a field already narrowed by interest and fertilized by special knowledge. All of which is now mere platitude; but in the nineties it was anything but platitude. It was novel to the point of audacity. And as it ran counter to the most cherished opinions of the period, it did not readily get a hearing.

Except in the training colleges. Here it was not possible to turn a deaf ear to so persuasive a voice from within the very precincts. For John Adams was the head of a training college in Scotland. A few years later—in 1902 to be exact—he became the first Principal of the London Day Training College, now the Institute of Education, and the first Professor of Education in the University of London. On the academic side he came to be regarded as the head of his profession. Sir Robert Blair once declared at a public dinner: "There are 20,000 teachers in London, and the greatest of them is John Adams"—a remark which was not only striking but had the additional merit of being true. It thus came to pass that the first people to be influenced by Adams's opinions were the teachers at the training colleges; that is the teachers of teachers. Their tenets became less Froebelian and more Herbartian. Their belief in a crude theory of formal discipline began to crumble and decay. The old text-books were discarded and more enlightened ones chosen in their place. But not at once. An important work, *The Art of Teaching*, published in 1898, a year after *Herbartian Psychology*, excellent as it was as a practical guide, was still vitiated by such statements as this: "The mental powers grow and are strengthened by use, and we pursue certain studies not because we think we are ever likely to be called upon to apply them, but because we know that they make the mind fitter for the performance of any task. Greek and Latin, apart from their value as keys giving entrance to ancient treasure-houses of thought and beauty, afford an excellent training in precision; analysis and parsing offer ready exercises in the logical process of classification."

By 1904, however, when Mr. Thomas Raymont published his *Principles of Education*, the new leaven had begun to work. Wholly abandoning the faculty doctrine Mr. Raymont took up the position that school studies should be chosen on other grounds than those of training but should be so taught as to yield all the training that was necessary. Two years later came Mr. Welton's *Principles and Methods of Teaching*, which denied the primacy of mental discipline and affirmed the purpose

of education to be " to lead the child into the fullest, truest, noblest, and most fruitful relations of which he is capable with the world in which he lives." These two text-books were widely used in training colleges and represented the kind of doctrine they were willing to accept and to transmit.

In Scotland, as was reasonable to expect, Professor Adams's influence was more immediately felt. There was his voice first heard, and his early students, among whom Dr. R. R. Rusk is a notable example, readily absorbed his teachings, and rapidly extended them in their own lessons, their own lectures, and their own writings.

In England, outside the training colleges, the diffusion was slower. Such books as *Psychology in the School Room*, by Dexter and Garlick (1898), and *School Management and Methods of Instruction*, by Collar and Crook (1902), books which tried to harness an obsolete psychology to an obsolescent pedagogy, continued to be read by acting teachers and to be regarded as the authoritative voice of science. But younger teachers were pouring in from the training colleges and gradually ousting the older generation ; and indeed, in London at least, the older generation themselves went in crowds to hear courses of lectures by Adams under the auspices of the London County Council. The outcome is that we now rarely hear any reference to the cultivation of faculties, except of course among the laity, and that the whole scheme of object lessons, lock, stock, and barrel, has disappeared from our schools.

I have dwelt at such length on this question of formal discipline because I believe that the change in the professional attitude towards this basic problem has been Adams's most formidable task and most notable achievement. It is true that he himself owed much to Herbart and his followers, and it is true that other psychologists had turned their eyes towards the same problem, but to him belongs the honour of first bringing it clearly and concisely before the teachers of this land and of showing them what a vital bearing it had on the theory and practice of their craft.

This, however, is only one of the ways in which Professor Adams has proved a pioneer and a reformer. There are many others. Indeed, it would be difficult to point to any development in modern education which is not to be found in embryo in Adams's first book. The passage most frequently quoted from that book is this :

" ' Verbs of teaching govern two accusatives, one of the person, another of the thing ; as *Magister Johannem Latinam docuit*—the master taught John Latin.'

Thus far the Latin rudiments. When the master seeks to apply the principle in real life, he finds that he can manage his double accusative only by the possession of a double knowledge: he must know Latin; and he must know John. Not long ago it was considered enough to know Latin . . . John was either taken for granted or held to be not worth knowing."

This has often been regarded as merely an exhortation to the study of psychology. But it is more than that. Adams draws a clear distinction between the psychology of boyhood, which is the study of the average boy, and that more practical psychology which is concerned with the study of the particular boy—the study of John. For John not only resembles the other boys in his class, but differs from them in many subtle and significant ways. And it is the practical recognition of this fact that marks the distinction between the teacher who is a true artist and the teacher who is a mere journeyman working by rule of thumb. Here, too, in this recognition of the claims of John, we see the mainspring of the movement towards individual work which later on took definite shape under the hands of Dr. Montessori and Miss Helen Parkhurst.

Sir John Adams was the first to call our attention to the educational importance of jokes. This is a matter on which he had a right to speak with authority, for he himself was an expert. He joked all his lifetime, and all his jokes were good. And all original. They were never ill-natured, they were never irrelevant, they were never lugged in to make the groundlings laugh. They were as natural and spontaneous as Charles Lamb's, and sprang from the same deep seriousness, the same fundamental sympathy with human weakness and human eccentricities. They more often came under the head of humour than of wit. He was, to use a term of his own, no *jokesmith*.[1] The sparks when they came "had to fly off at their own angle" without any guidance from him. And even if the sparks did not always illuminate the subject, they at least never burnt anybody. In a lecture at the Battersea Town Hall many years ago he referred to a well-known educationist and went on to say, "He is a friend of mine—or at least he *was*, but he became an inspector." Nobody enjoyed the joke more than a certain inspector who was present.

Though Sir John Adams's first book was an explanation of Herbart he refused to call himself an Herbartian. Indeed, if he had left out all the Herbartian machinery and kept in all the Adamsian insight and common sense the book would have suffered but little loss. And this is, in fact, what he actually did in most of his subsequent books. Each may be shown to be a treatment *in extenso* of some topic or topics already treated *in parvo* in the earlier book; but with the Herbartian jargon transformed

[1] See *The Teacher's Many Parts*, p. 215.

into the King's English. Such terms as "circle of ideas," "dome of consciousness," and "apperception masses," were quietly dropped—or rather were translated into Adams's own delightful idiom. He became an eclectic. He chose what suited his scheme from Froebel, from Spencer, from Montessori, from the experimental psychologists, and indeed from any source whatever; but he declined to join any educational sect. He had his finger on the pulse of the scholastic life of many lands; for as he used to put it, he made a practice of reading all the current books and journals on education in four languages—English, French, German, and American. That was one of his little jokes. The fact, however, remains that no event or movement, no adventure or experiment in the field of education escaped his notice, or failed to be expounded by him in his lectures and his books, with a clarity and a lightness of touch which were entirely his own. This is well exemplified in one of the most characteristic of his books, *Modern Developments in Educational Practice* (1922). It is not generally known that in his early days Adams employed his leisure in writing books for boys under the intriguing *nom de plume* Skelton Kuppord. The numerous boys (and girls) who read *Hammond's Hard Lines*, *The Rickerton Medal*, and *The Enchanted Island* little realized how learned and distinguished was the man who had written them.

In his old age Adams wrote a psychology which was published under the name of *Everyman's Psychology*. He wanted to call it *Psychology with the Chill Off*, a title which would admirably have described its contents. It is meant to be an introduction to psychology for the man who knows nothing about it. And a very good introduction it is; wise, witty, and easily digested. And as it has the Adams flavour throughout, there is not a single dull page in the book.

To understand Adams's peculiar prestige in his profession it is necessary to know what manner of man he was, what he looked like and how he talked. Neither his stature nor his general physique gave token of the reserves of vitality which he must have possessed. His head, however, did. *That* was magnificent. It was large, finely proportioned, and well set between his shoulders. His shapely cranium—a veritable "dome of consciousness"—was peculiarly impressive, and was perhaps the most professorial thing about him. Below the brow his face, handsome as it was and made dapper by a well-trimmed beard, might have belonged to a keen and pleasant person of any other calling.

A lecture by Adams was an event to be remembered. He was always punctual and precise. He appeared on the platform on the stroke of the hour, spoke for exactly sixty minutes, and then suddenly disappeared. And what a pleasant discourse it was! Though his manuscript was always spread out before him it was difficult to say whether he was reading it or

speaking extempore. If he read it he must have done so with his beard, for his face fully fronted the audience. His marked Scottish accent, which, thank Heaven, he never lost, lent piquancy to all he said. Not the least remarkable thing about his discourse was the evenness of its texture. It was equally good throughout. It never rose to eloquence, it never sank to platitude. It was a steady flow of common sense enriched by telling metaphor and quaint turns of expression; and ever and anon it would glow with the speaker's humour or glitter with his wit. He liked to spring a joke on his audience when it was least expected. His face never gave him away. It was wholly impassive. No one could tell by looking at him when a joke was coming; nor yet when it had come. One had to seize it as it fleeted past or else miss it altogether. But jokes or no jokes the lecture went home. As a piece of exposition it was an exquisite work of art.

It cannot be said that he suffered fools gladly; at any rate he did not allow bores and fribbles to waste his time. His room on the first floor at the London Day Training College offered little defence against aimless callers. So Adams had a small and secret staircase made which corkscrewed down to the porter's room. And when the porter spotted an unwelcome visitor he gave a pre-arranged signal; and while the visitor went up one staircase Adams went down another.

To the genuine seeker for help, however, he gave unstintingly of his time and his talent. For he was essentially generous; generous in his appraisal of his contemporaries, generous in his appreciation of the work done by others in the field of education. There seemed to be in him a total absence of envy, of pettiness, and of small-mindedness. Coupled with this was an incredible degree of selflessness. Many years ago I had on one occasion to interview at the London Day Training College certain candidates for the London teaching service. One of them, who had made a special study of Herbart for her degree examination, was asked what authors she had read on the subject. She named De Garmo, Felkin, Hayward, and a few others. "And, of course, Professor Adams," I interpolated. "Has Professor Adams written on Herbart?" she asked in astonishment. Adams had been her tutor. He had taken her through a course on Herbart—and had never mentioned his own book.

Such was Sir John Adams, a man whom it was a piece of good fortune to know. If we divide mankind into those who add to the sunshine of the world and those who add to its gloom, we must place Adams definitely in the former class. He had not only a genius for teaching; he had a genius for cheerfulness. And it has been said that after Nature stamps a man of genius she breaks the die. I feel sure the Adams die is broken. Take him for all in all we shall not look upon his like again.

RÉSUMÉ.

SIR JOHN ADAMS.

Sir John Adams exerça pour la première fois une influence sur l'enseignement en Grande Bretagne par la publication, en 1897, d'un livre intitulé " La Psychologie de Herbart appliquée à l'Éducation." Comme il fut, peu de temps après, nommé directeur d'une école normale, considérée ensuite la plus importante en Angleterre, ce fut par les écoles normales que cette influence se répandit d'abord. Son œuvre la plus considérable fut de transformer l'opinion des membres de l'enseignement sur la doctrine de la discipline formelle, doctrine qui maintient que la valeur de la discipline intellectuelle est indépendante de la matière de cette discipline. Il écrivit beaucoup de livres excellents qui exposèrent d'une façon bien claire, et avec beaucoup d'humour, les efforts qui se faisaient dans le monde entier pour résoudre les problèmes de l'éducation. Il publia aussi un livre populaire sur la psychologie. C'était un conférencier bien renseigné, stimulateur et spirituel. C'était un homme, qui possédait un charme personnel considérable, qui était prêt à tout moment à aider les autres et chez qui, chose rare, on ne trouvait aucune trace ni de vanité ni d'importance.

ZUSAMMENFASSUNG.

SIR JOHN ADAMS.

Sir John Adams beinflusste das Erziehungswesen in Grossbritannien erst im Jahre 1897 durch die Veröffentlichung eines Buches betitelt " The Herbartian Psychology Applied to Education." Da er bald darauf zum Leiter des Institutes für Pädagogik, welches später als führendes in England galt, ernannt wurde, geschah es durch diese Institute, dass sein Einfluss sich zuerst geltend machte. Seine grösste Leistung lag darin, dass er die Stellungnahme der Lehrerschaft gegenüber der Lehre von der formalen Wissenschaft änderte, der Lehre, dass der Wert geistiger Bildung vom Stoff der Bildung unabhängig sei. Er verfasste viele ausgezeichnete Bücher, die mit grosser Klarheit und viel Humor die Versuche auslegten, die man überall in der Welt machte, um erzieherische Probleme zu lösen. Er schrieb auch ein populäres Buch über Psychologie. Als Vortragender war er belehrend, anspornend und witzig. Als Mensch hatte er grosse persönliche Reize, er war immer bereit, anderen zu helfen und in einzigartiger Weise frei von Eitelkeit und Wichtigtuerei.

SPEECH TRAINING: A SYMPOSIUM.[1]

General Survey: ELSIE FOGERTY.
Æsthetic Aspect: J. CLIFFORD TURNER.
Phonetic Aspect: DANIEL JONES.
Remedial Aspect: E. C. MACLEOD.
Summary—Psychological Aspects: T. H. PEAR.

GENERAL SURVEY.

By ELSIE FOGERTY.

I.—*Man's faculty of speech.*
II.—*Speech: including content, language, and utterance.*
III.—*The history of a speech impulse.* (*Diagram.*)
IV.—*Possibilities of error or obstruction in speech.*
V.—*Speech development in the history of man.*
VI.—*Nature and limitations of our speaking apparatus.*
VII.—*Skeletal changes and the evolution of speech.*
VIII.—*The ear in speech.*
IX.—*The æsthetic factor and its psychological influence.*
X.—*Racial development of language.*
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XV.—*The second language.*
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XVII.—*The law of reciprocal innervation in speech in relation to rhythm.*
XVIII.—*Corrective speech training.*
XIX.—*Principles of speech training, phonetic and phonological.*
XX.—*Speech therapy. Classification of speech defects and a table.*
XXI.—*Conclusions.*

I.—MAN'S FACULTY OF SPEECH.

IN speaking of Man's faculty of Speech it is plain that the term "faculty" is used in a rather special sense. The faculty of speech is not a single act of sense-perception as in the case of sight and hearing, nor merely

[1] From papers read at a meeting of the British Psychological Society in London.

its whole influence on man's behaviour, as we use the term when we speak of a deaf person, nor is it confined to one series of perceptions. Rather does it consist of a series of interchanges, so complicated and involving so many distinct actions of the neuro-muscular system, that it forms a kind of clearing-house for all man's other faculties, and establishes in his mind a series of kinæsthetic memories, correlated with emotional, logical, and æsthetic impressions, which form almost a complete re-creation of his whole mental and emotional life.

II.—SPEECH: INCLUDING CONTENT, LANGUAGE, AND UTTERANCE.

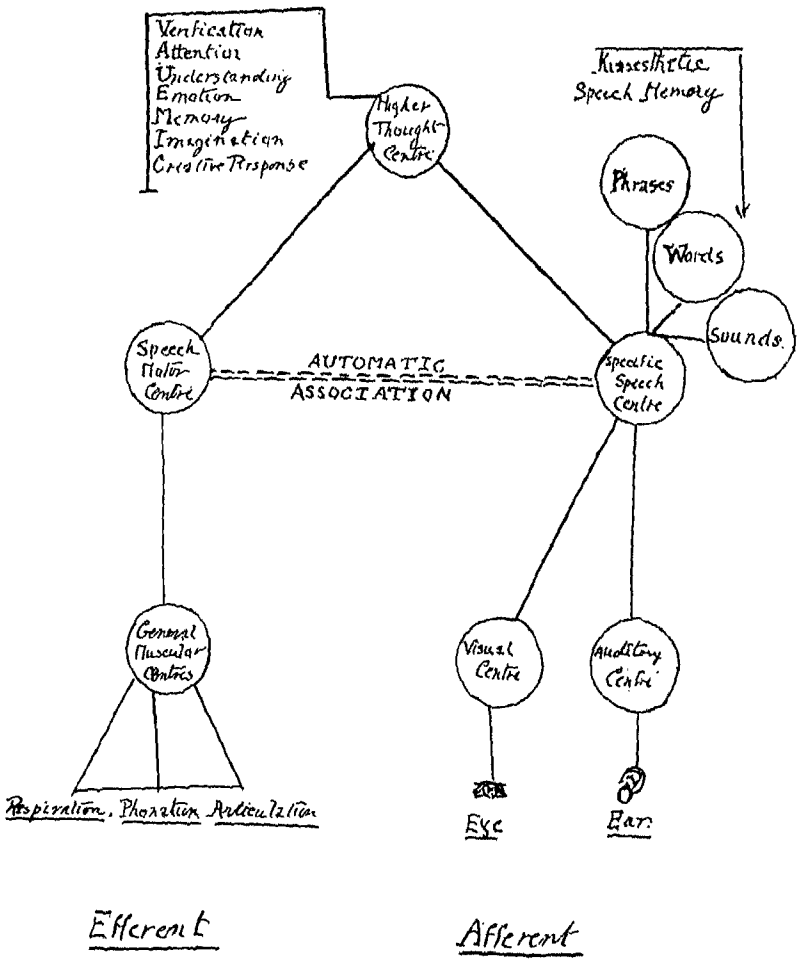
Speech from this point of view includes content, language, and utterance. Under certain conditions, speech content approximates to the whole mental content of the individual. We may "think in words." Language is in effect a code, incredibly complex, in which vocabulary, order, graphic symbols, and utterance, form, not merely a constantly changing temporary means of inter-communication between individuals, but a record and a vehicle for the whole history of man, on which are based our conceptions of truth, justice, and progress, so taking in a measure the place of instinct. In this discussion to-day utterance and its record must of necessity take the greater place and it is in this sense that we shall be using the term "Speech faculty."

III.—THE HISTORY OF A SPEECH IMPULSE.

Speech, as we feel it individually, consists of a dual impulse: afferent and efferent; sensory and motor; perceptive and expressive. It expresses the emotional and logical needs of our consciousness and in addition conveys the clearest impression which others can receive of our conscious and unconscious personality.

No other power which we possess balances so completely perception and expression. Gesture is too automatic and confused, though we must never lose sight of the fact that utterance is carried on by audible movements. It is possible to express the course, by afferent and efferent action, of a speech impulse diagrammatically. One must, however, guard very carefully against the suggestion of attempting so to represent any physiological facts of brain action. In the present condition of our knowledge, an effort to relate closely the phenomena of speech with brain structure or with specific centres can hardly be attempted by the most accomplished of our scientific investigators. It would be an impertinence to suggest that any teacher possesses the qualifications which enable him to discuss such a question; indeed, these scientific conclusions are,

if anything, less definite and less unanimous than they were twenty years ago. Such suggestions as I make bear, therefore, no greater relation to definite, ascertained anatomical and physiological facts than a diagram of the underground stations of London does to the depth, elevation, and



construction of these stations. It is nevertheless useful to realise that a speech impulse in its simplest form springs from some visual or auditory impression, passing from peripheral stimulus to the nerve centre; calling up kinæsthetic images which are the memory of sounds, syllables, words, and phrases[1]; so conveying to the higher thought centres a recognisable

[1] H. Bergson: *Matière et Mémoire*, p. 113.

impression of logical or emotional significance; the efferent current, passing to the Motor Speech Centre; and so to the specific centres controlling respiration, phonation, resonant preparation, and articulatory movement, and resulting in utterance.

IV.—POSSIBILITIES OF ERROR OR OBSTRUCTION IN SPEECH.

Rough as this suggested schema is, it gives an immediate sense not only of the fineness of the co-ordination achieved, but of the multiple possibilities of error and obstruction involved, and, finally, of the long physiological growth implied in the evolution of speech capacity in Man, and the long individual habit and practice essential to the perfection of its individual accomplishment.

V.—SPEECH DEVELOPMENT IN THE HISTORY OF MAN.

So far as evolution is concerned, Man spoke when his mental development reached a point where he had something to say. As Mr. V. E. Negus has pointed out, man made the best use possible of the apparatus he possessed. It is of absorbing interest to trace how he overcame the obstacles presented by this apparatus.

VI.—NATURE AND LIMITATIONS OF OUR SPEAKING APPARATUS.

It may be claimed—if the survival value of man's speech faculty is what we believe it to be—as the most perfect example of what I should like to call survival by the development of capacity.

The obstacles were, briefly, these. First, the two vital functions of the larynx—its part in guarding the entrance to the respiratory system during swallowing, and its part in the fixation of the thorax.[1] These functions are part of a chain, a scale action, which when initiated tends to proceed automatically. So in phonation, a tense or forcible position, hand clenching, chest stiffening, etc., automatically sets up a sharp laryngeal closure, voice becomes a grunt, a harsh shout, a violent glottal shock, or some other form of ugly and dangerous phonation. The initiation of the swallowing series, by such actions as lip widening, tongue eversion, or constriction of the pharynx, also affects not only the resonation but the fundamental note. The greater muscular strength available for a vital function, such as the raising of the larynx in swallowing, cannot be met by a violent antagonism such as trying to force the larynx down, but by the true sense of the law of reciprocal innervation, the

[1] V. E. NEGUS: *The Mechanism of the Larynx*. (London: Heineman.)

relaxation of the antagonistic muscles by poise, and kinæsthetic training.

I need not dwell on the similar antagonism between the balance of inspiration and expiration in repose, and the quick full *in* and slow controlled *out* action of phonation. Sir Arthur Keith, Sir Charles Sherrington, Peter Thompson, and William Pasteur pointed out in their memorial to the University of London in 1912, that the combination of lower costal and diaphragmatic breathing solves the inspiratory problem, and Sir Arthur Keith and Dr. Aikin have since individually made clear the true nature of vocal expiratory action by diaphragmatic relaxation under the direction of abdominal control.

VII.—Skeletal changes and the evolution of speech.

While man's vocal apparatus was, in fact, adequate for phonation, it is interesting to notice how the skeletal changes in his evolution have so often been of a nature to assist the more strictly voluntary actions of speech. The final assumption of the upright position and the reduction of arm effort has reacted favourably on tone and is associated with important cranial modifications all favourable to speech.[1] (1) The more forward position of the Foramen Magnum (the insertion of the spinal cord in the skull), and the change in its angle of insertion, so that it is nearly central and vertical, permits of the perfect balance of the skull, the more vertical angle of the larynx, and the lowering of the back of the tongue; (2) The shortening and rounding of the palate to a length hardly exceeding its breadth; the breadth being greater at the back, coupled with the greater arch of the hard palate, the reduction in size of the teeth, and their arrangement in a regular curve, all allow room for resonation and for the tongue tip action; (3) The lower jaw develops a point of more exact and definite attachment which allows greater control and more exact vertical movement; (4) The jaw itself is lighter, and the development of the chin allows the tongue to lie forward and low, under the level of the lower front teeth, while leaving the throat muscles free; the most favourable position for phonation; (5) The shape of the jaw changes from prognathous to orthognathous, a change effecting sibilants and the higher articulatory resonances in consonants and vowels; (6) The angle of the mouth and nose cavity gives more exact balance between nasal and oral resonation; (7) But, above all, we have the development of the frontal arch of the skull over the frontal lobe of the brain which, to quote Sir Arthur Keith, "we have reason

[1] Sir Grafton Elliot Smith: *The Evolution of Man*. (Oxford University Press.)

to believe is in some way concerned with the power to give utterance to thought."

The voluntary elements of muscular action in speech lie in the jaw, the tongue tip, and the lips. To these may be added the control of respiratory action and of relaxation and freedom from tenseness in all the external muscles of the throat and tongue.[1]

VIII.—THE EAR IN SPEECH.

For singers and speakers the control of phonation and of the internal laryngeal muscles is an indirect control through the ear.

This might all be summed up in the contrast between the cranial development of a Chimpanzee, a Greek, and a Mentally Deficient type.

IX.—THE ÆSTHETIC FACTOR AND ITS PSYCHOLOGICAL INFLUENCE.

Above all, we recognize the tremendous importance of the psychological factor in the development of speech, and, therefore, the primary place which must be accorded to the æsthetic side of speech training.

X.—RACIAL DEVELOPMENT OF LANGUAGE.

We see the adjustment of language to the needs and occupations of man, from which we derive not merely the racial distinctions of language, whose political and social importance is almost overwhelming, but also the fact that we ourselves are compelled at different times in our lives to acquire new vocabularies for new forms of knowledge; here we must give first place in importance to the arts and sciences which record a correct speech. The substitution of a phonetic basis for an ideographic basis in writing was a decisive factor in the mental evolution of man, comparable only to the discovery and elaboration of mathematics.

XI.—GREEK PERFECTION IN SPEECH.

It is interesting to notice that in one nation,—the Greeks of classical times,—many of these factors were perfectly combined:

(1) The plastic fixation of perfect human poise from the physical point of view. (Greek Sculpture.)

[1] See also the illustrations of these various factors in the collections and guides of the fossil remains of man in the Natural History Museum, South Kensington.

(2) The racial development of the perfect speaking apparatus, in the relationship of skull structure—forehead, nose, jaw, etc.[1]

(3) The geographical possibility of the most perfectly balanced æsthetic life ever enjoyed by man.

(4) Arising out of this, an æsthetic perception, founded on rhythm and balance, which must eventually have carried human speech at one bound almost to absolute perfection. Added to this, we have the existence of a script more closely knit to language than any previously achieved, particularly in regard to vowel quality, duration, and tonic accent. Under all these conditions a social place was given to the æsthetic arts of dance, poetry, drama, oratory, and prose composition which achieved by the consensus of succeeding time and evolution a perfection to which we still apply the term "classic."

The creation of true musical instruments tuned to a "scale," intensified and extended man's ear for pitch, making it both absolute and relative. An instrument helps man to transcend his capacities. A machine supersedes and atrophies them.

XII.—The influence of religious ritual.

In tracing man's age-long development, one would be inclined to give the highest æsthetic value in speech to the practice of ordered religious ritual; simple enough to be congregational, but stately and rhythmical in musical, poetic, and oratorical quality; attuned to measured movement, aiming at ordered emotional expression, and the sublimation of individual selfishness in thought and in conduct. Along that line we see the starry presences of a Pheideas, a Sophocles, such acolytes as Purcell, Bach, and Mozart; such speakers as the great translators of our authorized Bible and Prayer Books; such singers as Herbert and Keble; such orators as Bosseut, Hooker, Wesley, and Newman.

XIII.—Speech development in the individual.

Passing now to individual development we trace the normal path of automatic, emotional, ejaculatory, and rational speech development, resulting in a code, adequate to childhood's needs, achieved purely by mimicry, through the medium of heard and practised utterance alone. This is followed by the power to decipher records of this code, with an immediate extension of vocabulary, and of phrase construction. Side

[1] See series of comparative models in the anthropological section, Natural History Museum, South Kensington.

by side, or following this, we achieve written script, with its burden of spelling, heightened by the logical imbecilities imposed by an aphonic script; a modification of content in the form of personal expression occurs at this stage.

XIV.—PERIODS OF SPEECH MODIFICATION AND DISTURBANCE.

It is now usually considered that the individual has "learnt to speak." Frequently no further advance on this stage of utterance is ever made, though the period of second dentition produces an almost inevitable decline in clearness of articulation. Self-consciousness at this period, and nagging correction of articulatory defects, is a potent cause of the more serious speech defects, particularly in stammering.

A complete modification is usually achieved in the language code at school age; æsthetic and logical by direct teaching; secret, defensive, and slangy, as a psychological defence against authority. Sometimes there is strong emotional censorship of all freedom of speech before elders. A second crisis in utterance marks the voice changes of puberty, often prolonged as a symptom of self-consciousness or repression; at times with keen æsthetic distress at the loss of a good singing voice.

Voice strain, gruffness, chronic immaturity, persistent inaudibility all have their origin at this age. Speech is rarely normal again till the nineteenth or twentieth year.

XV.—THE SECOND LANGUAGE.

During this period, however, the acquisition of a second language may have exercised a great social and mental influence for good, not only in regard to linguistic content and utterance, but in breaking down the speech fixation which recognizes only one linguistic code, and finds all others absurd or bad. To this stage of mentality, in arrested development, belongs the political use of language questions, and many of the major absurdities of local patriotism.

XVI.—ÆSTHETIC STANDARD IN UTTERANCE.

But the one vital force in speech development is provided by the clear establishment at some stage of a genuine æsthetic standard.

There are four uses of speech which do not relate merely to the code of linguistic communications[1]:

Song,
Verse Speaking,
Drama,
Oratory.

[1] See ELSIE FOGERTY: *Speaking of English Verse.* (London: Dent.)

The first consists in an extension of the vocal and melodic elements of speech, employed in the formation of more or less rhythmic patterns. *La parole contient le chant autant que la raison.*

Verse speaking orders the rhythmic elements of speech into determined patterns, which enhance its significance and its emotional value beyond the capacity of normal speech.

Drama is the recreation of life in speech and action so that the conflict of character and circumstance convince us of reality and fascinate us by intensity; movement and speech in it follow a completely artificial rhythm of time, of force, and of space.

Oratory is the elevation of individual communication to a level where it is audible to and influential upon the mass, and where by its appeal to herd instinct and group psychology, it completely transcends the psychological effects of normal speech.

Song demands vocal purity and melodic line; verse, completely rhythmic action in space and force and time; drama, characterisation combined with audibility and beauty; oratory, volume, and a freedom of utterance which enchants the audience while leaving the speaker's mind free to think only of the content of his speech.

Æsthetic standard is a standard of utterance equal to the demands of these four arts, and its basis is unquestionably physiological and rhythmic.

Cf. ELSIE FOGERTY: *The Harmony of Physiological and Æsthetic Standard Speech.*—Proceedings of the International Conference in Speech Therapy, Budapest, 1934.

XVII.—THE LAW OF RECIPROCAL INNERVATION IN SPEECH IN RELATION TO RHYTHM.

Speech, with its co-ordinations transcending all other human activities, and involving in great secondary functions the whole respiratory apparatus, and the powers of phonation and articulation, is a supreme illustration, physiologically, of the law of reciprocal innervation.[1]

The psychological expression of this law and its æsthetic fulfilment is found in rhythm—i.e., the perfect combination in action of force, time, and space under the direction of intention. The operation of this law, demanding as it does the balanced relaxation of antagonistic muscles, teaches us the use of relaxation to eliminate the faulty contractions of wrong habits, especially those set up by psychological disturbance, as in the case of stammering. Silence in rhythmic pauses is an essential background to perfect speech.

[1] See note by SIR CHARLES S. SHERRINGTON: Report of University of London Committee on *Voice and Breathing.*—*The Lancet*, 1913.

XVIII.—CORRECTIVE SPEECH TRAINING.

These principles are valid also in corrective speech training—the correction of errors which chain the speaker too closely to an inferior environment; and curative speech training—the therapeutic treatment of defects which permanently prevent the speaker from attaining the standard of his normal environment.

XIX.—PRINCIPLES OF SPEECH TRAINING, PHONETIC AND PHONOLOGICAL.

It is impossible to touch on details of method here, but we do cut across certain purely phonetic principles in æsthetic practice, notably the following:

We seek a physiological, rather than a purely linguistic standard in breathing, phonation, vowel formation, and general corrective work, the principal differences being a definite element of control in respiration; elimination of glottal shock, the establishment of a resonator scale common to song and speech as the fundamental basis of vowel positions; a scale that is:

(*a*) Giving the most central resonative pitch to each vowel;

(*b*) Most perfectly maintaining the general resonation tone of the voice;

(*c*) Avoiding interference with any of the mechanism which gives rise to the fundamental laryngeal note;

(*d*) Securing the most easy and rapid transitions from position to position in word articulation.

We plead for a correction of the unscientific terminology of "back" and "front" vowels; a greater insistence on logical and rhythmic articulation and phrasing.

Finally, in the treatment of serious failures in speech the question of classification seems all-important; here purely phonetic classification has no validity in regard to the most serious defects, and at the best is only a tabulation of symptoms. Physiological classification, essential in determining the cause of serious defects, belongs primarily to the medical profession; it leaves many disorders unexplained, and concerns itself with the presence of speech failure as a pathological symptom in many disorders so serious that the possibility of work in speech therapy would be ludicrous to contemplate. As a working method even psychological classification, though infinitely superior and essential to a true understanding of the subject, nevertheless lacks a method completely suitable to the subject of speech.

See Dr. W. A. AIKEN: *The Voice*. (London: Longmans.)

I suggest a classification based on the nature of speech itself, and concerning itself primarily with an obstruction or arrest in the normal course of the individual speech impulse.

XX.—SPEECH THERAPY: CLASSIFICATION OF SPEECH DEFECTS AND A TABLE.

The diagram on page 12 illustrates how such obstruction is found in blindness, deafness, and mental deficiency below the level of speech recognition: these are cases where the defect modifies the whole educational history of the child, and must, therefore, demand institutional treatment and completely specialized tuition, but the following present a logical order definitely helpful in training and in practice:

A.—AFFERENT PATH:

(1) *Visual.*
Alexia (word blindness).

(2) *Auditory*:
High-frequency Deafness.
Tone Deafness.

(3) Sensory Aphasia.
Mental Retardation, general or specific.
Pathological Conditions following on Cerebral Lesions.
(These appear in the first instance along the afferent, or sensory path.)

B.—EFFERENT PATH:

(4) Motor Aphasia: Congenital (Hearing Mutism).
Pathological.
Nervous.

(5) *General Failures in the Mechanism of Articulation*:
Respiratory Failure.
Aphonia: Pathological.
Functional.
Nervous.
Post-operative conditions of the Naso-pharynx.
Paresis.
Deviated Septum or other nasal obstruction.
Cleft Palate.
Hare Lip.
High Arch.
Dental Deformity.
Nervous Abnormality in Articulation (lateral lisp), etc.

(6) *Specially Psychological and connected with Behaviour*[1]:
Stammering.
Hysterial Mutism.
Delayed Baby Talk.
Vocal Dysphonia.

XXI.—CONCLUSIONS.

As my conclusion, may I suggest:

(*a*) That the establishment and recording of linguistic code in regard to selection is the province of phonetics, with which we must not lightly interfere, but that we should aim at the perfect harmony of physiological and æsthetic standard, recognizing the psychological principles involved in its establishment;

(*b*) That speech in its entirety is so essential a part of human development, and exercises so profound an influence on man's capacity and mastery over life, that a complete and synthetic study of all its aspects is essential to our well-being.[2]

ÆSTHETIC ASPECT.

By J. CLIFFORD TURNER.

I.—*Definition of æsthetic standard.*
II.—*The four factors of vocal sound.*
III.—*The breath: capacity and control.*
IV.—*Respiratory and laryngeal co-ordination.*
V.—*Action of resonators.*
VI.—*Their development and control.*
VII.—*Failure in resonation.*
VIII.—*Control of articulatory movements.*
IX.—*Method of procedure in voice training.*

I.—DEFINITION OF ÆSTHETIC STANDARD.

BY an æsthetic standard of speech is meant a standard of utterance capable of serving to the utmost any of the four arts of Song, Verse Speaking, Drama, and Oratory, which employ speech as their medium.

[1] The consequences of any form of speech failure are always definitely psychological.

[2] See further ELSIE FOGERTY: *Speech Craft.* (London: Dent.)

In the first three of these arts we are forced to draw a distinction between speech as such and the use of the voice as an instrument of interpretation, the speaker in this latter case standing in relation to the author as the violinist or pianist does to the composer. In other words, the singer, verse-speaker, actor, and pianist are executants, and the two prime needs of an executant are perfection of technique and a sensitive response to the work of the artist he is serving. Accordingly, an æsthetic standard of speech demands perfection of the voice as a musical instrument, and the cultivation of great acuity of sense-perception. For, minus the ability to convey the inner life of a song, poem, or stage character, the utterance from the very nature of speech itself, cannot be called beautiful, and while it is not necessarily a thing of sound and fury, more often than not it signifies next to nothing. The example of the individual with all the requisite sensitiveness of approach, but minus the technique, is obvious. As an executant he does not exist. Thus, while of necessity dwelling on the means by which beauty of sound is achieved, I have in mind this deeper aspect of the beauty of speech.

Æsthetic standard then may be defined as beauty of utterance in the service of art. It enables the executant to surmount the difficulties of the *lieder* of Wolf, Isolde's *Liebestod*, the Odes of Keats, the soliloquies of Hamlet, and the higher flights of oratory. While an Isolde may not be able to persuade the multitude, or a Hamlet to excel in the singing of *lieder*, the basic principles underlying the use of the voice are the same, namely, insistence upon the importance of good phrasing, free unhampered use of the note, full sonority of tone, allied with good placing and consonantal clarity.

The development and perfection of the voice consists in perfecting the audible movements which give rise to speech. For this purpose the term speech is restricted to mean the movements of the muscles of the abdomen, chest, larynx, mouth and nose, resulting in vocal sound.

II.—The four factors of vocal sound.

There are four components of vocal sound: the breath, the note, the tone, and the word. The breath supplies the force which is necessary to set up vibrations of the vocal cords which form the note. This note then undergoes considerable modification in the spaces above it, acquiring general quality from the resonator as a whole, but especially from the lower portion in the neck, and particular quality, distinguishing the vowels and consonants, from the upper resonator in the mouth. Beauty of speech can be achieved only when these four factors are developed in

relation to each other. I will touch on the salient points of such development.

During expansion of the chest a negative pressure obtains in the air passages, and air flows in from without. In contraction there is a positive pressure in the air passages and air flows out. Normally an ebb and flow take place rhythmically and unconsciously. For the singer or speaker this has to be reversed, for breathing must have been brought under the direct control of the will and must remain under the control of the intention while the voice is being used.

III.—THE BREATH: CAPACITY AND CONTROL.

The breath is the force or power, and as such the two requirements of the voice-user are a sufficient quantity of breath and control over its expenditure. Capacity is achieved by voluntary conscious effort encouraging the excursion of the lower ribs combined with the descent of the diaphragm. Control is established by maintaining the ribs in an expanded position while allowing the diaphragm to move up and down in the chest under the voluntary control of the abdominal muscles. In this way the breath force is governed by the positive action of the abdominal muscles and the restraining negative action of the raised ribs. The position is maintained by the strength of the intercostal muscles alone, every other muscle of the body being free to relax or contract independently. It has been proved in practice that by using such a form of breathing the demands of phrasing are completely satisfied, the demands of audibility partially so, while the note is supported and tone is encouraged.

IV.—RESPIRATORY AND LARYNGEAL CO-ORDINATION.

When the breath stream passes up from the lungs either one of two things may happen to it. The vocal cords may lie apart, giving rise to voiceless sounds such as *p, f, sh,* or they may be brought together in such a manner that in obstructing the breath force, they vibrate. This produces the element of note. The vocal cords are locally unconscious, and though they are brought under the indirect control of the ear, no attempt is made to bring them under the control of the will. The note is regarded as part of a natural expiratory act. The vocal cords come together each time we breathe out, and it only requires the desire to make sound in order to bring about their complete approximation. In training, much can be done to increase the compass of a voice, to deal with problems of resonation at the top of the compass, and

to indicate the general level of pitch to be used in the speaking voice but a great deal can be done to ensure the necessary perfection of co ordination between the breath and the laryngeal muscles. The onset o the note may be imperfect in three ways. The vocal cords may be brough together before the emission of the breath stream, producing what i technically known as the glottal stop, a clicking sound before each initia vowel sound often also making its appearance elsewhere. While this is a interesting linguistic phenomenon its use from the æsthetic point of viev is to be condemned. Its removal is simple in theory—by the mere practic of prefixing an H sound, when the cords will be brought into th breath stream in place of obstructing it before they vibrate, but it i difficult to remove when the habit is confirmed. Secondly, the voca cords may come together after the breath stream has passed betwee them, and this associated with a certain muscular condition of the laryn produces a breathy note, giving the voice a woolly indefinite quality Extremely difficult to eradicate, it is best tackled by insisting on a greate measure of breath control and keener onset of the note. The third erro occurs when the note to be sung is imperfectly perceived. This result in a kind of scoop-up to the required note. The correction of this i clearly concerned with ear training by insisting on a greater measure o concentration on the note at the instant it is to be sung, combined wit firm attack and even breath-pressure.

V.—The action of resonators.

The actual note itself is, of course, never heard apart from the influence the resonators have had upon it. As I shall point out, in training full advantage is taken of this fact. Thus the note is under the contro of the will as regards loudness and duration. All else is brought unde the control of the ear, and no conscious muscular action in the larynx can do anything but interfere with the natural instinctive formation o sound.

In common with other sounds, the note produced by the vocal cords is complex, consisting of fundamental and accompanying partial tones. The note in passing through the cavities of the neck and mouth is re-arranged; the fundamental passes out intact and thus determines the pitch, but the cavities, by reason of their size and shape, are in a position to favour a note of definite pitch. It is owing to this phenomenon that we are enabled to form the speech sounds of a language. Our chief interest for the moment, however, lies in the value of this fact as regards the tone of the voice. In considering hollow resonators it is a well-known principle that small ones will respond to high-pitched notes and large ones to low-pitched notes.

VI.—THEIR DEVELOPMENT AND CONTROL.

The development of tone, therefore, consists in enlarging the resonators that they may favour the lower partials of the vocal note, and thus may impart full sonority to the note as it passes through them. Now the lower part of the resonator in the neck is the principal instrument of tone and its enlargement is effected by the descent of the larynx. This movement is purely theoretical and cannot be consciously performed. Such enlargement results from good bodily poise, perfect freedom, and relaxation, in all parts of the body, principally in the neck, and by the expansion of the bases of the lungs through the maintained elevation of the lower ribs. In addition to this, the jaw must be left open and the body of the tongue kept well forward, with its tip against the lower teeth. Hearing plays an essential part in establishing and maintaining good continuous tone, and it is through listening to the whispered pitches of the vowels that we are able to hear the quality of tone that will result on vocalizing. When there is full expansion of the neck combined with the open jaw and forward tongue, nasal resonance may be safely introduced. Perfect resonation is achieved by holding a balance between the three cavities.

VII.—FAILURE IN RESONATION.

Excessive use of the mouth combined with an undeveloped lower resonator, leads to thin reedy tone. Use of the neck at the expense of the mouth gives a dead muffled tone, while the tone achieved by the excessive use of the nose is so well known that description is needless. The tone is moulded and formed into words by the movement of the tongue, jaw, lips, and soft palate, which by varying the shape of the mouth determine the particular quality of the tone as it leaves the speaker. These resonances may be studied by eliminating the note and forming the vowel sounds with the breath alone. On breathing each vowel sound a note of definite pitch is heard, the lowest being oo and the highest the vowel ee. In between fall the rest of the English simple vowels, the whole series forming a perfect musical scale. This resonator scale is built up round the vowel ah, whose position is defined in such a way as to satisfy completely the requisite standard of pronunciation combined with the maximum degree of resonation. This is achieved by an open jaw, unretracted lips, forward tongue tip, complete relaxation of the muscles of the throat and tongue base, and by expansion of the lower resonator in association with rib reserve breathing. All vowel sounds are formed from this position either by rounding the lips or raising the tongue.

The open jaw, unretracted lips, forward tongue tip, relaxed throat muscles, and expanded neck are constant. The result of this is to obtain maximum sonority for each vowel sound at any point in the compass of the voice.

VIII.—Control of articulatory movements.

Consonants are considered as interference with the full sounding properties of the resonators. First, those which are voiced or sounded and which are capable of being prolonged are practised in association with vowel sounds leading to the establishment of an unbroken line of resonance; and, lastly, those which necessarily interrupt the flow of tone. Over these articulatory movements we are able to establish direct voluntary control.

The voice, then, is governed at its two extremities; below, where the lower ribs hold out the bases of the lungs, the controlled breath force governs the note and encourages the general expansion which gives good tone, and above where the articulation of words is felt by the lips and the tip of the tongue far forward in the mouth.

IX.—Method of procedure in voice-training.

This fact has an important bearing where training is concerned, for a fundamental change in the order in which I have described the four factors takes place. After breathing has been dealt with the logical step is to proceed to the development of the resonators by means of the resonator scale, thus studying and perfecting the condition of the cavities themselves as resonators, and the articulatory movements which give rise to speech. With such a preparation the element of note is introduced with the precautions already described, and with the certainty that the voice will adequately fulfil its functions both as a musical instrument and as the instrument of speech.

It is through such a course of training that æsthetic standard is arrived at. New vocal habits, based upon the laws of physics and anatomy, are achieved through consciously performed actions directly or indirectly controlled. Such actions ultimately become unconscious during training, with the result that the executant is sure of effortlessly achieving the finest result from his voice as an instrument, his mind being solely concerned with the thoughts and feelings of the author he is serving.

THE PHONETIC ASPECT.

By DANIEL JONES.

I.—*Aim and methods of phonetics.*
II.—*"Good" and "bad" pronunciation: the reason why people prefer certain speech-sounds to others.*
III.—*Conclusions.*

I.—AIM AND METHODS OF PHONETICS.

The aim of the phonetician is twofold: (1) to determine with precision the movements made by the tongue and other parts of the organs of speech in pronouncing words and sentences, (2) to cause his pupils to perform unaccustomed movements with their organs of speech; in other words, to pronounce new sounds or new combinations of sounds.

The processes of phonetics can be applied in various ways. For instance, it is possible by means of them to teach an apt pupil to pronounce a foreign language in a manner almost indistinguishable from a native, whether that language is one such as French, which has certain affinities with English, or whether it is an absolutely remote one such as Chinese or Zulu. It is also possible to teach a pupil to make changes in his pronunciation of his mother tongue; and it is this aspect of phonetic work in which this Conference is chiefly interested.

It should be explained here that phonetic work is not concerned with voice-production. The phonetician is concerned with tongue-articulations, etc.; we leave the manner of producing the voice to those who are specialists in that subject. These two branches of speech training should, in my view, be kept distinct; any *pronunciation* can be combined with either good or bad *voice-production*. There are plenty of people, for instance, who speak what is called "good" English but use bad voice-production. And conversely one not unfrequently hears good voice-production combined with quite incorrect pronunciation; this may be observed notably when good singers sing foreign songs.

II.—"GOOD" AND "BAD" PRONUNCIATION.

Another point to be noted is that the phonetician concerns himself with the recording of facts, and his teaching is based on such records; he does not (or at any rate it is better that he should not) concern himself with what is "good" or "bad" in pronunciation, or with what is "right" or "wrong" or with the "prettiness" or "ugliness" of sounds.

In fact, it is his function to take up a rather detached attitude in regard to such questions. By doing so he finds that much of what is sometimes called "beautiful" or "ugly" in speech is not intrinsic beauty or ugliness at all, but is merely convention. The use of a certain sound recalls an unpleasant circumstance or reminds us of somebody we do not like or whom we despise, and (often without realizing the connexion) we attribute ugliness to the *sound* instead of to the circumstances recalled by it.

To give an example: Many people think it ugly to pronounce *face* as [fais][1] But if you come to think of it there is nothing intrinsically ugly about this syllable or about any parts of it; we use the vowel-sound [ai] in *nice*, *twice*, and *ice* without thinking it ugly, and the sound cannot become ugly simply because someone puts an *f* in front of it. In fact, I can imagine that if we are thinking of snow and ice or skating, many people might consider the sound of the word *ice* rather pretty. But if I were to make exactly the same sound [ais] in speaking of the "[ais] of clubs," some of those people might regard that same sound as being ugly. This instance shows that we are not dealing with intrinsic prettiness or ugliness: the sound [ais] cannot vary its inherent prettiness according as a person uses it to denote frozen water or a certain card in a pack.

The real reason why people who pronounce [feis] do not like the sound of [fais] is that they connect the variant [fais] with Cockneys and slums and what they call "vulgarity," while they connect by a convention [feis] with gentility or elegance or culture. (Incidentally, it may be remarked that [feis] and [fais] may both be said with either good or bad voice-production.)

This detached attitude of merely regarding sounds as sounds (apart from any inherent beauty they may possess, if any), of examining them as we find them, of analysing their mode of formation and noting who are the people who use them, leads to very useful results. When we come to study pronunciation with this attitude of mind, we make many interesting discoveries, some of which may cause surprise. One discovery which the observer of phonetic phenomena makes at quite an early stage of his studies is that he finds he actually uses a great many pronunciations which at first he might have been tempted to condemn. Another is that when you listen carefully to the speech of those who condemn particular forms of pronunciation, you will often hear them use the very pronunciations they are condemning. It is also interesting to find out the effect which one's own pronunciation has on different people;

[1] Square brackets indicate phonetic transcription.

my pronunciation was, for instance, once described by a teacher of some position as " the speech of costermongers and servant girls," and on another occasion by a provincial amateur philologist as a " nauseating London simper."

We learn from such experiences to be very tolerant about other people's pronunciation ; and that tolerance greatly facilitates the task of practical teaching. If one is trying, for instance, to teach the sort of English I am now using to a class of Cockney schoolboys, and if one is intolerant about their speech and tells them that their way is " wrong " or " bad " or " ugly," it simply antagonizes them. They do not like being told that the kind of English they have always used and which is used by their parents, their brothers and sisters and friends, is " bad." But if the teacher takes up a more tolerant attitude and explains that they have a language which serves its purpose well for home use, but that there exist many other ways of talking ; that some of these ways are only understood well in restricted areas, say London, or South Lancashire, or the neighbourhood of Dundee, while others are readily understood over much wider areas—some, in fact, over the whole of the English-speaking world : that it often comes in very usefully if a man can talk a kind of English which is easily understood everywhere, and that is why a special kind of English is taught in school ; then the teacher can get the boys on his side, and they become willing to learn the school pronunciation instead of thinking it silly and affected.

As to details of the methods of applying phonetics in the teaching of speech, I could, of course, give many examples to show what can be done, but it is hardly necessary to do so here, since most if not all of those present are familiar with modern methods of teaching pronunciation. But I should like to emphasize one thing, namely, that phonetic methods deal not only with the articulations of consonants but also with the more difficult problem of the utterance of vowels. It is a relatively easy thing to teach a child to say *butter* when his home pronunciation is to use what we call the " glottal stop " instead of the *t*, or to say *getting* when his home pronunciation is *gettin* ; and it is generally not difficult (provided you can induce the pupil to co-operate willingly) to cure lisping and other individual mispronunciations of consonants. But it is a good deal more difficult, though none the less feasible, to teach the so-called " cultured " pronunciation of *face*, *tea*, and *two* to pupils accustomed to say [fais], [t^həi], [t^həu]. Such things are mainly a matter of directing the pupils to put their tongues and lips into certain positions, and helping them by suitable dictation exercises to discriminate by ear between different shades of sound-quality.

III.—Conclusions.

Any pronunciation can be combined with either good or bad voice-production.

Much of what is sometimes called "beautiful" or "ugly" in speech is merely convention. The beauty or ugliness applies to certain environments, and we are apt to attribute beauty or ugliness to sounds which remind us of those environments.

A study of phonetics often reveals that we ourselves use pronunciations which at first sight we might be tempted to condemn. We thus learn to become very tolerant of other people's pronunciation; this tolerance on the part of a teacher of speech makes him more efficient.

THE REMEDIAL ASPECT.

By Eileen MacLeod.

I.—*Differentiation between dialectal and defective speech.*
II.—*Sphere of the teacher of speech training; general development of speech and adjustment of simple difficulties.*
III.—*Sphere of the speech therapist. Difference between speech therapist and teacher of speech training and drama.*

I.—Differentiation between dialectal and defective speech.

The speech of the individual is the expression of the mental and physical condition, capacity, development, and control of the speaker. The study of a person's speech reveals, therefore, a great deal of information as to his early environment, social class, and intellectual level. Children are rarely taught to speak but are forced to rely on their powers of mimicry, and, therefore, in most cases, faithfully copy the speech they hear around them in early years, be this pattern good, bad, or indifferent. Whether such speech will be considered satisfactory in school or in later life depends on its degree of freedom from dialectal, social, and personal peculiarities. Provided, however, the speech of the individual coincides with that of any group of the native English-speaking community, it cannot justifiably be called defective; nevertheless, it is often desirable to modify dialect, to raise the cultural level of speech, to increase the degree of audibility, precision and ease of articulation, to develop greater powers of oral expression, and this is primarily the sphere of the teacher of speech training having a sufficient practical knowledge of phonetics.

II.—SPHERE OF THE TEACHER OF SPEECH TRAINING; GENERAL DEVELOPMENT OF SPEECH AND ADJUSTMENT OF SIMPLE DIFFICULTIES.

With regard to work among quite small children, much could and should be done by class teachers, after a simple but practical course of phonetic training, in adjusting "babyish" speech habits, lisping, and other slight difficulties, and this should be a part of ordinary school routine, a preliminary to the teaching of reading. Because, generally speaking, in infant and elementary schools, greater attention is given to reading than to speech, many easily adjustable speech difficulties persist into later life. Many such cases may be found in secondary schools and even in teacher training colleges. The actual speech difficulty is usually quite simple to adjust, but, owing to the length of time which has elapsed, a strong habit has been formed which naturally takes time and perseverance to change, and, furthermore, there is always a degree of psychological disturbance connected with any speech peculiarity, and this, again, requires either direct or indirect treatment. Here, then, the teacher of speech training with a special knowledge of remedial work, finds ample scope within the educational sphere, the true realm of the teacher.

III.—SPHERE OF THE SPEECH THERAPIST. DIFFERENCE BETWEEN SPEECH THERAPIST AND TEACHER OF SPEECH TRAINING AND DRAMA.

But there are many defects and disorders of speech of a more serious or deep-seated nature, organic defects such as cleft palate and harelip, nodes on the vocal cords, etc., or such functional disorders as stammering, aphonia, and hyperphonia, and these, together with all cases of apparently simple difficulties which have not easily yielded to educational treatment as mentioned above, should be passed, with as little delay as possible, to a specialist in defects and disorders of speech, in other words, to a speech therapist of recognised standing.

It should be noted that the training of a speech therapist includes the scientific study of normal speech and abnormal speech in all its many manifestations, both in adults and children, several years practical training in a hospital speech clinic, a special study of phonetics, psychology, anatomy and physiology, orthodontics and prosthetics, neurology, besides various other subjects such as mental testing and playroom method. It is an entirely different training from that of a teacher of speech and drama, a scientific approach as distinct from the æsthetic.

Disordered speech, especially stammering, is frequently the main symptom of psychological disorder, and, therefore, if it is not merely to be a question of the palliative treatment of a *symptom*, it is essential to seek the underlying cause and to make general adjustments. Clearly this delicate work should only be entrusted to experienced and responsible speech therapists, working in co-operation with the medical profession.

SUMMARY: PSYCHOLOGICAL ASPECTS.

By T. H. PEAR.

I.—*The functions of speaking.*
II.—*Training for discussion.*
III.—*The influence of the microphone.*
IV.—*Spoken and written style.*
V.—*Conversation as a psychological problem.*
VI.—*Psychological Criteria of Effective Speaking.*
VII.—*University lectures.*
VIII.—*The neglect of speaking by contemporary psychologists.*
IX.—*Summary.*

I.—THE FUNCTIONS OF SPEAKING.

THE functions of speaking may be regarded from many aspects. For the purposes of this paper, Professor Grace de Laguna's views[1] of them will be gratefully borrowed, with slight modifications. The functions are: (*a*) to induce sympathetic emotion, (*b*) to issue orders or commands, (*c*) to give or request information.

In any act of speaking, special stress may fall upon one of these functions. Yet the above seems a practical assessment of the tasks which, nowadays, speaking is required to do.

The preceding contributors to this symposium dealt with the ways in which when one has something to say, it can be said most effectively. They assumed, however, that the speaker knew what he was to utter. One might perhaps compare their contributions with expositions, both scientific and artistic, of figure-skating. In them, the necessary movements are recorded. Admirably successful attempts are made to prescribe the "best" anatomical, physiological, and artistic postures and movements necessary for thses evolutions. In the pupil's mind there is an idea of a goal or aim. It is prescribed for, but not by him.

Now let us compare such individual, uninterrupted, uncompetitive skill with that required in ice-hockey. Here it is assumed that the player can skate. He is then taught to perform specific tasks of attack, defence, feinting, strategy, all in combination with or against other players. If a superb figure-skater were to learn ice-hockey, he might find all his previous lessons useful, yet I suspect that this latter game requires one to make many movements which to the solo figure-skater might appear inartistic or "wrong." To draw the parallel, if I were a parliamentary candidate, pitted against an old-established, locally popular opponent, I should not

[1] *Speech*, 1927. (Oxford University Press.)

recruit my supporting speakers exclusively from the ranks of actors, announcers, and reciters. Repartee, quick change of mental direction, are similar to hockey tactics. Yet the game cited, a destructively competitive one, is comparable to debate.

II.—TRAINING FOR DISCUSSION.

Training for constructive discussion is much more important. In such training the technique necessary to appeal to different types of mind, to expound, suggest, discuss, argue, persuade, will be of first-rate psychological interest.[1]

III.—THE INFLUENCE OF THE MICROPHONE.

Though speaking is behaviour, a human being does not behave in a vacuum, but in and towards a situation which makes certain demands upon him. Before 1920, most speakers, reciters, and actors knew in advance the type of audience which would make the demands. Nowadays, the microphone, serving radio and the film, has made it impossible for a speaker to anticipate any particular type of listener. The successful radio-talker, for example, has to appeal, in a few minutes, to many different types.

His task is thus harder, but in partial compensation, it is much easier to make himself heard. No longer need he fear " dead spots " in the theatre, or learn to throw a stage-whisper to the back of a huge building. Perhaps before long few will worry about a hall's bad acoustics. for already the dullest after-dinner speeches and the most commonplace songs are amplified with loving care.

At present, however, in some of our universities, few realize the modern possibilities of the microphone and amplifier. Famous visiting lecturers are given food and drink, but no chance of audibility.

Only those who teach speakers to use, or be used by, the microphone, can realize how its privileges might be gratefully acknowledged by exploring more fully its potentialities. For example, the speaker may alter his pace to produce greater agreeableness or intelligibility. To do this in many large halls without the help of the microphone would court failure. Too little experiment has been made into the possibilities of transmitting by radio the vivid discussion of a group. A most pleasing gift to the lonely intelligent soul, living amongst people with depressingly predictable opinions, would be the chance of hearing such discussions more frequently.

[1] Cf. T. H. PEAR: *The Psychology of Effective Speaking* (London, 1933), Chapters VIII and IX; also *Training for Discussion.*—Proceedings of 23rd Educational Conference, London, 1935. (*In Press.*)

IV.—Spoken and Written Style.

Every new art is limited by its medium and by its instruments. Few critics are so fatuous as to compare with each other a pencil-sketch, an etching, a water-colour, and a stage-scene. The microphone, in the service of radio or film—these must not be confused, for they differ greatly—encourages the development of new methods of clothing one's thoughts. Here one might protest against the often illegitimate distinction between matter and manner. The speech which floats with lazy ease from the loud-speaker may have been concentrated, re-drafted, put into spoken style and rhythm, even deliberately touched up by phrases which would not obtain a distinction in the higher school certificate examination.

You will be able to supply examples. Commander Stephen King-Hall's talks to children[1] are full of them. A press photographer, the other day, began a radio-talk by saying, " If there's one thing I wouldn't choose to be in order to see anything, it's a camera-man."

The whole question of the modern divergence between written and spoken style and between writing for the eye and writing for the ear is suggested by such considerations.[2]

The effect upon the public of continually hearing important matters discussed colloquially may be that oratory, in the popular sense, will become comic. Even now it is persistently and often successfully caricatured.

A trainer of speakers ought to consider the needs of those who will be seen and heard, those who will be unseen, as " on the wireless," those who will speak for the film ; and, looking ahead only a year or so, speakers for radio with television. Pronunciation for an English-speaking public on both sides of the Atlantic may have to be approved by an Anglo-American advisory committee.

V.—Conversation as a Psychological Problem.

Psychological consideration of speaking opens up many almost untouched problems in connexion with some very old subjects—e.g., lectures, university and other discussions, debates, and the nature and uses of conversation. The last-named social phenomenon affords

[1] *Here and There.* (London : Sidgwick and Jackson.)

[2] Cf. Bonamy Dobrée, *Modern Prose Style* (Oxford University Press), and T. H. Pear, *The Psychology of Effective Speaking*, Chapter XIII : " Spoken Style and Written Style."

amusement, instruction, extracts information, and regulates social behaviour. All these functions are of great interest for the student of social psychology.[1]

VI.—PSYCHOLOGICAL CRITERIA OF EFFECTIVE SPEAKING.

In the book already quoted, I have suggested as criteria of effective speaking clearness, articulateness, interestedness, disinterestedness, suitable pace, naturalness, avoidance of marked "dialects," geographical and social, sincerity and intimacy. As a friendly critic has pointed out, to record these criteria is not to disclose their psychological bases. Yet at present it may be held that even to name, describe, and illustrate vitally important problems in social psychology is worth while. Dr. Hadley Cantril puts this forcibly.[2]

The above are criteria, not of speaking only, but of personality. Not all their causes are mysterious. Unclearness may be due to catarrh, intoxication, defective or missing teeth, carelessness due to lack of teaching in early childhood, to inborn causes, or to general lack of interest in auditory experiences.

The personality-trait called "naturalness" is a storm-centre about which rage tempests of debate. "Natural" ways of speaking are frequently discussed. Let a Yorkshire boy, on leaving school, go to one of the more expensive English educational institutions and persist in speaking naturally, and a number of problems in social psychology may result. In the preceding paper, Professor Daniel Jones has shown how difficult it is for a phonetician to consider any one way of speaking as "natural." Yet we unhesitatingly judge certain speakers to be "affected," presumably using criteria like those by which we judge the suitability of a person's dress. Light was cast on this question when Professor A. Lloyd James, in his broadcast lectures, discussed the linguistic mannerisms of "Brighter Bloomsbury."

The friendly critic to whom I referred has written that "a good many of the arguments in *The Psychology of Effective Speaking* seem to assume that everybody, or nearly everybody, ought to be trained for some kind of formal speaking." But why not? I ask anyone who has doubts about this to visit our English elementary schools, and to note the care with which children are taught to write legibly and to select their written words. Then let him hear similar children, grown up,

[1] Cf. RUTH H. MANSON and T. H. PEAR: *The Conversation as a Problem in Social Psychology, Character and Personality*, Vol. III, No. 3, March, 1935. (*In Press.*)

[2] *The Social Psychology of Everyday Life, Psychological Bulletin*, 31, 5th May, 1934, 297-330.

speaking to a group of more than two people, six consecutive sentences, to express the fact that they demur, disapprove, or would like a matter of public importance to be considered. Why should speaking, in a way calculated to promote public administrative action, be restricted in England to a few social classes?

VII.—UNIVERSITY LECTURES.

The criticism continues "University lecturers are most drastically treated. No doubt many are chosen for reasons which have nothing to do with effective speaking, but my impression is that the bulk of teachers in a university shake down to a style and an audience that meets the needs of their case. On both sides of this perennial controversy more facts are needed, but in the meantime the serious suggestion that young university teachers should be handed over to University education departments to be trained to lecture seems little short of fantastic."[1]

Though this paper was not drafted with any idea that it might be published in an educational journal, it may be read by some members of university education departments. It would be useful to know whether, in their judgment, nothing can be done to help the beginner at university lecturing, one of the few skilled trades for which no preliminary training is required. "Shake down" is, perhaps, the right phrase. But in a university where there is no compulsion to attend lectures, how many students are shaken out of the class at an early date, repelled, not by the subject—for that they may continue to study in libraries and their own rooms—but by the dullness, the lack of preparation, the inaudibility, occasionally the contempt of some teachers for the beginner? These remarks are suggested by talks with students from several types of British university.

I repeat the suggestion that young people who have never taught, who do not know how to present a difficult subject, who often have curable defects in speaking, would benefit by help from somebody who would listen to their early attempts and suggest emendations. Could not the larger education departments in our universities contain at least one lecturer specially entrusted with new lines of teaching, and might not the charitable task of improving lecturers be one of them?

Some university teachers, who may be the life and soul of the common room, are regarded by students as dull. Though students will always be students, they grow up with disconcerting rapidity. They become men-in-the-street, voters, even members of Governments. And it is sad to say that on their lips "academic" is often a term of contempt, and

[1] pp. 129f.

"professor" a basis for disparaging if occasionally affectionate adjectives. It is possible to hold that the term "lecture," except when applied to a formal, uncompromising discussion of a difficult subject by an expert, is in disrepute. Lecturers sometimes salve their conscience by saying that lectures are obsolescent, since students ought to read text-books. Though this may be true of certain subjects, to admit it is rather damaging for a lecturer in a progressive science. Most statements in any scientific text-book used by a class are at least five years old. Few students can buy the half-dozen new books which an enthusiastic teacher may recommend in one hour; some students attend five lectures daily. Worst of all, to recommend a book to a large class may stimulate a race to the library for the only available copy, and it, too often, is on the lecturer's own shelves.

VIII.—THE NEGLECT OF SPEAKING BY CONTEMPORARY PSYCHOLOGISTS.

An enormous volume, *The Foundations of Experimental Psychology*,[1] is available for psychological students. It contains excellent, detailed discussions of difference-tones, colour blindness, gustatory and olfactory qualities—how much on speaking? In *The Fundamentals of Child Psychology*,[2] published by the same useful press, there is a chapter on "Language Development," with a bibliography of 236 titles, and a definition of language as a "system of habits." To describe this state of affairs, I have no adequate language habits.

IX.—SUMMARY.

Teaching pupils to speak effectively ought to include training for constructive discussion, especially in the techniques necessary to appeal to different types of mind, to expound, suggest, discuss, argue, and persuade.

A complication of the speech trainer's problem, with compensating possibilities, is presented by the use of the microphone, for amplifying speech in a public hall, for radio, and for the film.

The problem of conversation in its many forms is still relatively neglected by social psychologists.

University lecturing in England is, perhaps, the only skilled trade for which no preliminary training is expected.

The act of speaking in all its aspects receives little attention by psychologists, in comparison with other subjects of study.

[1] Edited by Carl Murchison.—Clark University Press, Worcester, Mass., U.S.A.
[2] Edited by Carl Murchison.—Clark University Press, Worcester, Mass., U.S.A.

Résumés.

L'ENSEIGNEMENT DE LA DICTION : UN RECUEIL D'ARTICLES COURTS.

Revue Générale.

La faculté de la parole chez l'homme consiste en une série d'échanges qui servent en quelque sorte de bureau de liquidation à toutes les autres facultés, et qui arrivent à recréer presque sa vie intellectuelle et morale entière. La Code du Langage enrégistre nos conceptions de la vérité, de la justice et du progrès et remplace ainsi jusqu'à un certain degré l'instinct chez les animaux.

(Diagramme.) Les cours afférent et efférent d'une impulsion à la parole, sans toutefois vouloir indiquer les faits physiologiques de l'activité cérébrale, suggère les possibilités multiples d'erreur et d'obstacles qui peuvent causer des défauts de la parole.

L'homme parlait lorsqu'il avait quelque chose à dire. Il se servait de son mieux de l'appareil qu'il possédait en l'opposant souvent à une fonction plus vitale, comme dans l'opposition entre l'acte d'avaler et cette d'articuler, entre la respiration pour parler et la respiration normale pour le repos ou l'activité. L'histoire du développement organique et fonctionnel du langage depuis l'aurore de la civilisation jusqu'au perfectionnement de l'expression dans l'âge classique des Grecs, démontre l'importance, du point de vue de la survivance, du développement d'une telle fonction. L'histoire de l'individu montre le besoin de la perfection physiologique, phonétique et esthétique dans l'expression.

L'Aspect Esthétique.

Un critère esthétique de la diction est celui destiné à servir les quatre arts, le chant, la répétition des vers, le théâtre et l'éloquence, qui emploient comme instrument la parole. La voix est réglée à ses deux extrémités : en bas, là où les côtes inférieures étendent le fond des poumons, la force de la respiration, ainsi contrôlée, détermine le ton et favorise l'expansion générale du résonateur, qui donne à ce ton, sur son passage, sa pleine sonorité ; et en haut là où l'articulation se fait remarquer sur les lèvres et sur la langue dans la partie antérieure de la bouche. En développant la voix de cette façon on peut former de nouvelles habitudes vocales, basées sur les lois de la physiologie et de l'anatomie, à moyen d'actes consciemment exécutées et réglées directement ou indirectement. De telles actes deviennent finalement, au cours des exercices inconscients, ce qui met l'exécutant à même d'arriver, sans efforts, aux plus beaux résultats, en employant comme instrument sa voix, tandisque son esprit est tout rempli des pensées et des sentiments de l'auteur qu'il interprète.

L'Aspect Phonétique.

Toute prononciation peut s'unir à une bonne diction, ou à une mauvaise. Bien des choses qu'on appelle " belles " ou " laides " dans la diction ne sont que de pures conventions.

La beauté, ou la laideur, s'associe à certains milieux et nous sommes portés à attribuer la beauté, ou la laideur, à des sons qui rappellent ces milieux.

L'étude de la phonétique révèle souvent que, nous-mêmes, nous employons des prononciations qu'à première vue nous serions tentés de condamner. Nous apprenons ainsi la tolérance envers la prononciation d'autrui. Cette tolérance chez un professeur de diction ajoute à son efficacité.

La Correction des Défauts.

Beaucoup de défauts de la parole peu graves pourraient être corrigés par des professeurs ayant une connaissance de la phonétique. Les défauts, dont la cause est plus profonde, demandent pourtant le traitement par quelqu'un ayant une préparation spécialiste à cette tâcte et possédant des connaissances scientifiques de l'anatomie, la physiologie, la neurologie, la psychologie, etc.

Des Aspects Psychologiques.

Enseigner aux élèves à bien parler devrait aussi les préparer à la discussion constructrice, et leur apprendre plus spécialement la technique nécessaire pour influencer différents types d'intelligence, pour exposer leurs idées, suggérer, discuter, raisonner et convaincre.

La tâche du professeur de diction est rendue encore plus compliquée, bien qu'il y ait là aussi des possibilités compensatoires, par l'emploi du microphone pour renforcer la voix dans des salles publiques, pour le radio, et par le style ecrit. Le problême de la conversation sous ses formes diverses a été plutôt négligé jusqu'ici par la psychologie sociale.

La fonction de maître de conférences dans les universités anglais est peut-être le seul métier spécialiste pour lequel on ne demande pas de préparation. L'acte de parler sous tous ses aspects n'occupe que peu l'attention des psychologues, en comparaison avec les autres branches de l'étude.

Zusammenfassungen.

SPRECHUNTERRICHT: EIN SYMPOSION.

Allgemeiner Überblick.

Das menschliche Sprechvermögen besteht aus einer Reihe von Austauschungen, die die Rolle eines Abrechnungshauses für alle anderen Fähigkeiten spielen, und fast zu einer Neuschöpfung seines ganzen Geistes-und Gefühlslebens werden. Die Sprache verzeichnet unsere Begriffe der Wahrheit, der Gerechtigkeit und des Fortschrittes und ersetzt also gleichsam die Instinkte in der Tierwelt. (Entwurf.) Der diagrammatisch dargestellte zuführende und wegführende Lauf eines Sprechtriebs-ohne dass aug die physiologischen Tatsachen der Gehirntätigkeit hingedeutet wird-liefert einen Begriff der vielfältigen Möglichkeiten des Fehlgehens und des Hemmens, die Sprechschwächen zu Grunde liegen.

Der Mensch sprach, als er etwas Sagenswertes hatte. Er machte den möglichst besten Gebrauch von den Vorrichtungen, die er besass, oft in Gegensätzlichkeit zu einer vitaleren Funktion, wie z.B. im Gegensatz zwischen Schlucken und Lautbildung, zwischen Atmen für Hörbarmachen der Stimme und dem normalen Atmen für Ruhe oder Tätigkeit. Die Geschichte der Sprechentwicklung, organisch und funktionell, von den Uranfängen der Zivilisation bis zur Vervollkommnung der Sprechweise im klassischen Zeitalter Griechenlands, zeigt den Überrestwert einer solchen funktionellen Entwicklung. Die Geschichte des Einzelmenschen zeigt die Notwendigkeit physiologischer, phonetischer und ästhetischer Vervollkommnung der Sprache.

Die Ästhetische Seite.

Eine ästhetische Sprechnorm sollte den vier Künsten des Singens, des Hersagens von Gedichten, des Dramas und der Redekunst dienen, die die Sprach als ihr Mittel benutzen. Die Stimme wird an seinen äussersten Enden kontrolliert. Unten, wo die niederen Rippen die untersten Enden der Lungen halten, beherrscht die auf diese Weise kontrollierte Kraft des Atems den Ton und hilft der allgemeinen Spannung des Resonators, was dem Ton, wenn er herauskommt, vollen Wohlklang verleiht, und oben, wo die Artikulation der Wörter von den Lippen und der im Munde nach vorne gestreckten Zunge geführt werden kann. Wenn die Stimme auf diese Weise geschult wird, gelangt man durch bewusst durchgeführte Tätigkeiten, die direkt oder indirekt kontrolliert werden, zu neuen, auf den Gesetzen der Physik und der Anatomie beruhenden Sprechgewohnheiten. Solche Tätigkeiten werden zuletzt während der Schulungsperiode unbewusst und machen es deshalb dem Sprecher möglich, ohne Anstrengung die allerbesten Resultate aus seiner Stimme als Instrument zu erzeilen; denn sein Geist gibt sich nur mit den Gedanken und Gefühlen des Dichters ab, dem er dient.

Die Phonetische Seite.

Jede Aussprache kann mit guter oder schlechter Stimme verbunden sein. Viel von dem, was man im Sprechen zuweilen "schön" oder "hässlich" nennt, ist bloss Gewohnheit.

Das Schöne oder das Hässliche bezieht sich auf gewisse Umgebungen, und wir sind geneigt, Lauten, die uns an diese Umgebungen erinnern, Schönheit oder Hässlichkeit zuzuschreiben.

Das Studium der Phonetik zeigt oft, dass wir selber Aussprachen benutzen, die wir auf den ersten Blick leicht zu verurteilen versucht sind.

So lernen wir, der Aussprache anderer gegenüber tolerant zu sein; diese Nachsicht seitens des Sprechlehrers macht ihn tüchtiger.

Mittel zur Abhilfe.

Lehrer mit kurzer phonetischer Ausbildung könnten sich mit vielen Sprechfehlern unbedeutender Art befassen. Zu tief eingewurzelten Fehlern ist Behandlung durch einen Spezialisten für abhelfende Mittel mit wissenschaftlichen Kenntnissen von Anatomie, Physiologie, Neurologie, Psychologie, usw. erforderlich.

Psychologische Seite.

Der Unterricht der Kinder im wirksamen Sprechen sollte auch Übungen in konstruktiver Diskussion umfassen, besonders im Können, das nötig ist, um auf die verschiedenen Typen des Geistes zu wirken, auseinanderzulegen, vorzuschlagen, zu besprechen, zu disputerien und zu überreden. Eine Schwierigkeit für das Problem des Sprechlehrers, mit ausgleichenden Möglichkeiten, ist durch den Gebrauch des Mikrophons zur Verstärkung einer Rede in einem öffentlichen Saal, im Rundfunk und vom Manuskript. Das Problem der Konversation in ihren vielen Formen wird von sozialen Psychologen noch verhältnismässig vernachlässigt. Vortragen an engl. Universitäten ist vielleicht der einzige gelernte Beruf, wofür keine vorherige Schulung erwartet wird. Im Vergleich mit anderen Fächern widmen die Psychologen dem Akt des Sprechens in all seinen Aspekten wenig Aufmerksamkeit.

A COMPARATIVE STUDY OF CHILDREN WHO ARE BACKWARD IN READING AND BEGINNERS IN THE INFANT SCHOOL.

By HELENE FRANK

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I.—*Introduction.*
II.—*The backward readers.*
III.—*The children of the infant school.*
IV.—*Conclusion.*

I.—Introduction.

A striking phenomenon occasionally met with in school children of normal intelligence is their inability to read and spell. This is specially surprising in so far as those children who are backward in reading do not differ from the good readers in regard to the functioning of their sensory mechanism. A good deal of research has been done on this subject. Among the important papers of recent years are those of Gates[1] and Monroe.[2] Both of these authors give a very detailed and systematic report of this deficiency and a detailed bibliography.

In the beginning of investigations on backwardness in reading there was the suggestion that this might be caused by a congenital defect in local brain centres, analogous to " word-blindness " found in patients with lesions of the brain. Through later investigation it became evident that this theory was no longer acceptable, and functional inferiority of the brain mechanisms responsible for the processes of reading and spelling was assumed.

It seems that at the present stage of research on this subject a definite answer to the question of the psycho-physical background cannot be given. But we might be able to clear up the psychological conditions which contribute to the defectiveness of reading and spelling and to interpret the various types of mistakes in terms of certain basic principles. Through former investigations of backward readers in German schools, and particularly through the treatment and cure of a serious case of such

[1] Gates, A. J., *The Psychology of Reading and Spelling with special Reference to Disability*.—Teachers' College, Columbia University, 1922.

[2] Monroe, M., *Children who cannot Read*.—Research Monograph Series. Chicago, 1932.

backwardness, I gained the idea that the difficulty in reading is naturally based on the specific manner of perception of a young child, and that in his perception the backward reader has remained on the level of a younger child.

The following is a short summary of my former investigation :

A boy 10 *years of age suffered from an almost complete inability to read : though he was familiar with printing and script writing, he sometimes confused certain letters, especially b-d, m-n ; he was not able to build up a word, the letters remaining isolated, and neither could he write from dictation. When he copied he " printed " the letters without understanding the sense of the context. He had a good knowledge of arithmetic and was of average intelligence.*

The first psychological examination showed no special anomaly. As the child had not improved in three years when being taught by the letter-syllable method (generally used in German schools) the treatment given was based on a special kind of word-sentence method. As a result of this treatment he learned to read in three and a half months.

During this period he invented a game. He would take words and sentences written on thick paper and read them from the back of the paper. It made little if any difference whether the words were turned upside down or were visible only in faint outline.

This peculiarity made it most difficult for the boy to learn to read. He confused many letters of the same structure which form a kind of mirror picture such as b-d, b-p, m-w and letters of a very similar structure such as m-n, v-w, he turned syllables round, reading them from right to the left. It is comprehensible, that with this deficiency he could not learn to read by a method which starts from the single letter and syllable, but he could well succeed by a method which in its beginning neglects the single letter and fosters a good appreciation of the " whole."

I found a similar condition in a great number of children who had difficulty in reading : e.g., one boy of 11 years could not succeed because he confused letters and words of similar structure ; in writing from dictation he gave the words in their general acoustic shape only, similar to " baby talk."

The object of the present research was, by means of a systematic investigation in a fair number of cases, to test the assumption that the deficiency is based on the specific manner of a young child's perception.

The fact that children begin to read at a very early age in England provided a favourable opportunity to test this assumption by ascertaining whether there is a connection between the mistakes which are normal in the young beginner and those which occur in the case of the backward reader.

I therefore proceeded after investigating 35 backward readers to take a comparative test with 350 children in infant schools. I will first give a description of the results which I obtained from the test given to the backward readers.

II.—THE BACKWARD READERS.

These backward readers were boys and girls of 7 to 11½ years of age. They were all pupils of junior schools. According to the teacher's estimates most of the children were of average intelligence, four were above average and five were definitely below.

With regard to the degree of their backwardness I classified the children into three groups: Group I, consisting of the most backward readers, included 8 children; Group II, with the less backward readers, included 16 children; and Group III, with the best of the backward readers, 11 children. There was, however, no exact line of demarcation between the different groups.

Characteristics of Group I.

The most striking fact about these children was their complete inability to build up a word from the letters. Either the letters remained isolated or the children pronounced the word in such a strange way that they did not get the sense of it. This isolation of the letters was intensified by the use of the phonetic sound of each letter—be, me, ne. For *bag* they said *beag*, for *Kitty*, *Keitty*, etc. Occasionally they succeeded when the letters given were similar to their specific sound in the word, or when the letters were given as parts of a word: grass—*gr.ass*. Words which they could read as "wholes" were often confused with words similar in a visual or auditory way. One child confused *brook-bark*, *out-not*, *would-world*. Some turned the words round: *yet-they*, *on-no*, *was-saw*. This inversion was not always an optical distortion. We often met cases where the letters were inverted when given verbally, e.g., we spelled *ea.t* and the child said *tea*.

Parallel with their inability to build up, they were unable to analyse a word. In spelling they could only break up a word into parts, or they wrote words similar in acoustic or optical structure: *hungry-ugry*, *asked-rste*, etc., or they mixed up the letters altogether: *milk-klsi*.

There was another interesting fact: they confused a large number of letters such as p-q, u-n, b-d, which are of the same structure and are a kind of mirror picture, or are of very similar structure, such as m-n, i-l, v-y, u-v. Some of the children (cf. p. 45) did not see the difference between v-y, or u-v and asserted "that is the same!"

The following is a description of a characteristic case of this group.

Case 1.—*Albert M., a boy of* 11½ *years, is completely unable to read. He is an intelligent boy and is of average ability in arithmetic. In speaking he has an incorrect and slurring pronunciation. He is completely unable to build up a word by reading the letters. When the letters are given he sometimes puts them together, but pronounces the word in a very strange way and cannot get the meaning. For example, we give the word k.i.t.t.y and he says* Keitty. *He is also unable to analyse a word. In spelling he names some of the letters in a wrong sequence, often he confuses r-l.*

In reading as well as in writing, b-p, b-d, u-v, m-n, u-v seem to be quite undifferentiated. We have to point out the v very clearly, in order that he can distinguish it from u. He writes from dictation : milk, mrk, mlc ; *glad,* lad, gad ; *warm,* wm, worm.

Characteristics of Group II.

In this group I found the same kind of mistakes as in Group I, but to a lesser degree. The main difference between these children and the children of Group I was their ability to build up easy words. There arose some difficulty in the use of the sound of the letter pronounced phonetically (me, ne) and a wrong pronunciation of the vowel. One child for instance was unable to get the word "father" because he used the vowel "a" as in "had," while the "a" sound in "are" was used in the word "gave."

In the children of this group I also found a confusion of words of similar visual or auditory structure and a similar confusion of letters.

They were all very poor in analysing words. In their writing from dictation the best of the group gave the words in the same auditory structure, writing phonetically, e.g., "milk-milc." Hard words were given in the outline of their structure only : e.g., "monk-make," "arrived-arriet."

Many mistakes in the dictation were caused by the confusion of letters of the same or similar structure. (See Table IVa and IVb.)

The following is a typical case of this group :

Case 11.—*Monty J., 8½ years, good intelligence, Class I of the Junior School. Reading an easy text is most difficult for this boy. He must build up every word. Often he does not succeed because of the faulty pronunciation of the vowel, e.g., "father" he pronounces "a" as in "had," "gave" he pronounces the "a" as in "are." He often confuses the letters d-b, m-n, i-l.*

In analysis he is very poor. He can break up the words into parts only : "small" he spells "sme-all," "asked"—"a-ske."

From dictation he writes : "milk-klsi," "nose-nos," "shop-sop," "warm-woom." (Dot jumped up and ran after it—"Dot jupt uq and ran ofr it.")

Characteristics of Group III.

The children of this group were of average ability in building up words. The reason for their deficiency in reading was the inability to distinguish some of the letters mentioned above and words of similar structure. Through this confusion they usually could not get the sense of the sentence and their reading was very poor. (In the case of one child we realized how troublesome the failure to differentiate even a single letter may be. He confused the letters b-d. Instead of " big " he read " dig," instead of " dish " he read " bish," and the text became so senseless that he was quite unable to continue his reading.) To make the text understandable they sometimes replaced the words which they could not read by words of similar sense. They had an average ability in analysing and their mistakes in the dictation were mainly caused by their confusion of letters. The following case is typical for this group :

Case 26.—*Frank M., 8 years, average intelligence. Class I of the Junior School. He reads an easy text quickly, but often loses the sense of the sentence by confusing the letters b-d-p. He has to read " . . . bad arm." He reads " dab " and is unable to read the word " arm." I correct " bad," and he is able to continue.*

In writing from dictation he writes : " Pan had a pig fish " (*Dan had a big fish*) *and* " the man gat a pig bish ofr the fish " (*the man got a big dish for the fish*). *In re-reading these words he reads them correctly and does not realize the mistakes.*

TABLE I.

LIST OF LETTERS CONFUSED BY BACKWARD READERS.

26 confusions of	b–d	confusion of letters which have the same structure and are a kind of mirror picture.
4 ,, ,,	p–q	
3 ,, ,,	b–p	
2 ,, ,,	p–d	
1 ,, ,,	q–b	
2 ,, ,,	u–n	
1 ,, ,,	m–w	
13 confusions of	m–n	confusion of letters of similar visual or auditory structure.
5 ,, ,,	i–l	
2 ,, ,,	n–h	
2 ,, ,,	t–l	
2 ,, ,,	v–y	
1 ,, ,,	u–v	
1 ,, ,,	f–t	
2 ,, ,,	ch–sh	
1 ,, ,,	r–l	
1 ,, ,,	v–th	

TABLE II.

SAMPLE OF MISTAKES OF THE BACKWARD READERS IN READING.[1]

(*a*) *by reading words of similar structure* :

brook-bark	nice-nose	world-would	if-it
were-went	out-not	this-his	then-they
soon-said	left-let	gaze-grace	it-is
anger-against	foot-forest	very-every	or-of
drank-dark	thought-through		has-was

(*b*) *by the confusion of letters of similar structure* :

eat-cat am-an how-now

(*c*) *by the confusion of letters of the same structure which are a kind of mirror picture (reversals)* :

desk-besk	slab-slad	ship-shid	pond-bond
bag-dag	doll-pon	plod-plob	had-hab
did-dib	do-go	dog-bog	

(*d*) *by the reversal of words* :

am-man	on-no	saw-was	big-gib
	of-for	eat-tea	its-sin

TABLE III.

SAMPLE OF MISTAKES OF THE BACKWARD READERS IN SPELLING.

(*a*) *by spelling the words as words of similar structure* :

jump-j.u.p.	found-f.ou.d.	traped-t.r.a.t.
drunk-d.r.i.k.	milk-m.i.l.	nose-n.o.

(*b*) *by spelling phonetically* (in some cases the child gives a correct spelling of his incorrect speech) :

still-s.d.i.l.l.	tree-t.r.e.	asked-r.s.k.e.d.

(*c*) *by spelling in parts* :

asked-ar.ste	brook-bre.ook	table-te.a.ble.
asked-r.se.te	children-che.i.de.ren	small-sme.all

(*d*) *by mixing up the letters* :

asked-s.a.k.s.

[1] A few of the errors of this table and the following tables might be classified under other headings as well because the children may make several types of mistakes in the same word.

TABLE IVa.

SAMPLES OF MISTAKES OF THE BACKWARD READERS IN WRITING FROM DICTATION.

(*a*) *by writing words of similar structure* :

milk:	mik, mek, mil, mrk, mec.
warm:	wold, won.
shop:	sop, sup, ssop.
nose:	nosn, norse, nrs, no.
dog:	nog.

(*b*) *by writing the words phonetically* :

milk:	mlk, mlc.
warm:	worm, wolm, wom, wam.
shop:	chop, shob.
nose:	nos, noss, noz.
bag:	beg.

(*c*) *by writing reversals of letters* :

shop:	ko*d*, ho*q*
dog:	*b*og, *g*od
bag:	*d*ag, *d*a*b*

(*d*) *by mixing up the letters* :

milk:	mickl, klsi.

TABLE IVb.

SAMPLE OF MISTAKES OF THE BACKWARD READERS IN WRITING FROM DICTATION.

(*a*) *by writing words of similar structure* (Sometimes the word has only the faintest auditory or visual resemblance to the original) :

dressed-derst	hungry-ugry	tired-tid	ran-rod
monk-make	after-hofd	good-god	who-how
arrived-arriet	apple-papple	gold-god	an-and
yesterday-yestday	could-cowld		

(*b*) *by writing the words phonetically* :

again-agan	arm-arme	back-bak
home-houme	bones-bounes	saw-sor
got-gat	path-pors	

(c) *by writing reversals of words and letters* :

jumped-juq	Dan-Pan	boy-doi
up-pu	dig-pig	dish-bish

(d) *by mixing up the letters* :

for-ofr was-asw

These mistakes may be summarized as follows :

A.—(1) Confusion of letters of the same structure (b-d) which are mirror images of each other.

(2) Confusion of letters of a similar structure.

(3) Confusion of words of similar visual or auditory structure.

B.—Inability to or difficulty in building up the word from the single letters : the letters remain isolated, or if put together, the reader does not get the sense of the word.

C.—Difficulty or inability in analysing the word :

(1) the child cannot recognize the single elements (the letters) of the word, but sometimes he can break up the word into parts,

(2) in spelling he produces the word as a word of the same auditory structure, spelling it phonetically,

(3) or as a word of similar visual or auditory structure,

(4) or he mixes up the letters altogether.

These mistakes are in entire agreement with those made in the cases described at the beginning of this paper, and those described in the literature dealing with this subject seem to be of the same type.

Hume[1] characterizes the reading backwardness of a boy of 9 years of age in the following way : " Weakness in ability to analyse and synthesize words, weak power of discrimination for letters and word forms similar in outline," . . . " confused b-d, v-w, used letters upside down." Fildes[2], who tested backward readers by optical forms showing right and left hand or top and bottom reversals, found that the non-readers were " able to discriminate between unlike forms and to remember them in a normal degree, except in cases in which the forms differ *only in part* or are alike *except in their orientation.*"

Monroe[3] found in her cases : a confusion of similarly shaped letters, reversals, difficulty in perceiving the orientation of visual patterns. She gives samples of mistakes in reading and spelling such as : Carl-crawl,

[1] HUME, GERTRUDE, *Backwardness in Reading.—Psych. Soc.*, October 10, 27, repr. *Educat. Research Supplem.*

[2] FILDES, LUCY G., *A psychological inquiry into the nature of the condition known as congenital wordblindness.—Brain*, Vol. 44, pp. 286-307.

[3] MONROE, M., loc. cit.

dig-dug, left-lift, dig-big, squirt-spirit, tack-track, blind-bind, was-saw, which she classifies as mistakes due to the use of faulty vowels, faulty consonants, reversals, additions or omission of sounds, and which according to our nomenclature are all words of similar structure. The same type of cases we fine described in I. A. Gates (loc. cit.).

I suggest that the apparent variety of these mistakes resolves itself into two psychological principles: (1) the importance of the "*structure*," the general "shape," the "whole" with the neglect of certain details; (2) the "*solidity*" of the structure, which is to be held responsible for the difficulty in *building up* the word from the single letters as well as in *analysing* the word into its elements—the letters. A more detailed discussion of this question will follow later.

III.—THE CHILDREN OF THE INFANT SCHOOL.

In order to establish my hypothesis tests were taken with 350 children from two infant schools in order to make a comparison with backward readers.

In the Infant School I the children began to read at 4 years of age, in Infant School II the beginners were 5 years of age.

The children were tested in the following way:

Test I.—To copy or to write from dictation the letters: b.m.h.g.o.e.p.d.n.t.c.f.s.

Test II.—To write from dictation such words as: Milk, warm, dog, shop, bag, nose, piano, table, picture, uncle, window.

Test III.—To write small sentences from dictation.

Test IV.—To spell some words.

Test V.—To read some sentences from a book which they were using in their classes.

RESULTS OF TEST I.

(Writing from dictation or copying the letters b.m.h.g.o.e.p.d.n.t.c.f.s.)

TABLE V.

This table contains the number (and percentage) of children of the Infant Schools who made mistakes such as:

(*a*) turning letters in writing;

(*b*) confusing of letters of the same structure, which are a kind of mirror picture, e.g.: b-d, p-q, p-d, etc.

(*c*) confusing letters of similar structure, e.g., m-n, f-t, etc.

INFANT SCHOOL I.					
Years.	*Total Number of Children.*	*Number and percentage of children who made Confusions in Dictation.*		*In copying.*	
		N.	%	*N.*	%
4-5	34	—	—	17	50%
5-5½	41	19	44%	—	—
5-5½	30	—	—	12	40%
5½-6	36	9	25%	—	—
6-6½	43	14	33%	—	—
7.....	43	5	11%	—	—
INFANT SCHOOL II.					
5-6	27	—	—	18	70%
6-7	70	28	40%	7	10%
6-7 (backward)	31	23	74%	2	6%

From the result of this test we learned that more than half of the beginners made mistakes by inverting some letters: ə.g.s.n. (e.g.s.n) and in confusing letters which are mirror images of each other, as b-d, p-q, and in confusing letters of similar structure as m-n and f-t. We find a regular decrease with the increasing age. But in a certain percentage of children those letters remain indistinguished and mistakes are made even in copying.

The most frequent confusion we find in the letters b-d. One little boy who habitually confused it said " that is the same on the other side ! " And he was quite unable to understand that the "same" thing in a changed position could have different meanings. Some children used to write the b or d "ꝺƀ" In some of the children, who confused the b-d as a single letter we found that there was no confusion when they had to write it in a word (dog, bag), which they had learned as a whole. The indistinctness of this letter seemed to be diminished by its position relative to the other letters in the word. That slight significance of the situation in space in things of the same structure I have met too in a former investigation.[1] We

[1] H. FRANK, loc. cit.

had a collection of two packs of similar cards with drawings and their mirror pictures. From among these cards children ranging from 5 to 9 years of age had to chose the identical designs. In this game a large number of the young children gathered picture and mirror picture. We found these mistakes in 62 per cent of the youngest children. Here too the confusion decreased with age. Of the 9-year old children only 18 per cent made mistakes.

RESULTS OF TESTS II AND III.

TABLE VIa.

SAMPLES OF MISTAKES OF 100 CHILDREN OF THE INFANT SCHOOL IN WRITING FROM DICTATION. (The figures in brackets show the number of children making the mistakes.)

(*a*) *by writing words of similar structure*:

milk:	mik (7), mick (2), mic (2), meek (1), mille (4), mill (4), milckie (1).
warm:	wall (2), wown (1), wion (1), wiem (2), wilm (1).
shop:	sop (1), cho (1), tholp (1), hop (1), shoh (1), soy (1).
nose:	nosis (1), noms (1), nosed (1), nov (1), nois (1).
bag:	bang (1), bank (1).

(*b*) *by writing the words phonetically*:

milk:	millk (5), millke (3), milke (1), milc (3), millc (1), milck (1), milgh (1).
warm:	worm (18), wom (14), wam (2), wrm (1), warme (1), wharm (1), wamn (1), wame (1), whom (2), whollm (1), whalmn (1), wharm (1), walm (3), wallm (6), wallme (1), wolm (1), waum (1).
shop:	chop (4), shp (1).
bag:	beg (1), bac (2), bak (2), bagh (2), baig (1).
glad:	glaed (2), glade (1).

(*c*) *by writing reversals of letters or letters of similar structure*:

shop:	sho*q* (10).
dog:	*b*og (10), *b*oc (1).
bag:	*g*ac (1).
glad:	*b*lad (1), gla*b* (1), *g*iad (1).
nose:	*m*os (5).

(*d*) *by mixing up the letters* :

milk:	mikl (1), micl (1), nclc (1).
dog:	dgo (1).
shop:	hsop (1), hcop (1), soph (1).
warm:	wllan (1).

TABLE VIb.

SAMPLES OF MISTAKES OF THE CHILDREN OF THE INFANT SCHOOL IN WRITING FROM DICTATION.

(*a*) *by writing words of similar structure* :

girl:	gill, gel, gil, gal, gall, gir.
uncle:	ucle, uccl, ucol, uccool.
window:	widow.
piano:	panono, pino.
picture:	picser, pictor, pichtaer, pichtuore.
mother:	mouthe, moer, mothe, mus, mun.
only:	olye, oly, olly.
for (me):	fow, fov, fo, fome.
there:	they, veer.
latch:	lash, lah, lak.

(*b*) *by writing the words phonetically* :

girl:	gerl, garl.
uncle:	unkl.
window:	woindow.
piano:	piana, peanow.
picture:	pictuore, picchar, picchure.
mother:	motha, muther.
only:	uonly.
for:	far.
there:	ther, their.
latch:	latsh, lach.

(*c*) *by writing reversals of letters or words* :

table:	ta*dle*.
up:	u*q*.
on:	no.
so:	os.
picture:	.erutcip.

The children of the Infant Schools were not used to writing from dictation and I chose difficult words for this test, because I wanted to see their mistakes. The mistakes were :

(1) writing the words in a similar visual or auditory structure ;

(2) writing the words in the same auditory structure (i.e., phonetically) ;

(3) in mixing up the letters altogether ;

(4) by confusing letters which have the same or similar structure ;

The children were quite ingenious in inventing a lot of phonetical writings of some words (warm, milk).

RESULTS OF TEST IV.

TABLE VII.

SAMPLES OF MISTAKES IN SPELLING IN CHILDREN OF THE INFANT SCHOOLS.

(a) *by spelling the words as words of similar structure* :

chat-g.at. tight-t.i.g. jump-j.u.p. father-fe.a.te.u.

(b) *by spelling phonetically.*

aunt-r.n.t.
umbrella-m-b-r.e.l.l.a.

(c) *by spelling in parts* :

ticket-te.ket. candle-ce.an.dle. brick-bre.ick.
skipping-ske.i.ping. butcher-be.ut.cher.

In this testing I found that the youngest beginners were hardly able to analyse a word at all. In the second and third year classes the children succeeded to a certain degree. Generally they could only break up the word into parts. These parts seemed to be the basic unit. One little girl, for instance, who had to spell the word " candle " and spelled : "ce.an.dle" was asked : " What is the last letter ? " And she answered : " dle." This kind of behaviour I found in several children.

The other mistakes in spelling were spelling the word as a word of similar structure or spelling phonetically.

RESULTS OF TEST V.

TABLE VIII.

SAMPLES OF MISTAKES IN READING IN CHILDREN OF THE INFANT SCHOOLS.

(*a*) *by reading words of similar structure*:

drink-drop	he-she	sting-stik	hold-had
they-then	here-her	would-will	me-my
can-cat	stop-shop		

(*b*) *by the reversals of words*:

not-to	no-on	of-for	as-sa

The children of these two Infant Schools were taught by the "look-and-say" method, and they were used in reading the word as a whole. In trying to build up a word from the letters, in the younger children the letters generally remained isolated and they did not get the meaning, especially when the word was not familiar to them. In reading words and sentences they made mistakes in confusing words of similar structure or sometimes in turning the word round.

IV.—CONCLUSION.

In looking through the results of these tests containing mistakes such as: confusion of letters of the same structure which are a kind of mirror picture, and of letters and words of similar structure, difficulty in building up and in analysing, we find: (1) a high accordance in the children of the Infant Schools, which is extremely obvious in Test I, the letter test, and Test II, the dictation test; (2) a complete accordance between the mistakes of the children of the Infant Schools and those of the backward readers.

This homogeneous behaviour of the young beginners in the process of learning reading and spelling leads to the conclusion that their mistakes are naturally based on their mode of perception. We are led to conclude that the mode of perception of the backward reader has remained on the same level as that of the young child. It is an acknowledged fact that development in a child does not always proceed uniformly. We often meet with cases where there is a good general development with arrested development in some particular functions, e.g., speech, motor skill.

Proceeding to discuss the psychological aspect of this deficiency: it has been suggested that the variety of mistakes in reading and spelling in the backward readers and in the young beginners which show no difference is based on two psychological facts—*the importance of the general shape*, the "*structure*" of a thing with the neglect of certain

details which do not alter the outline of the whole; (2) *the solidity* of the structure.

It has been established by many observations and experiments that these two qualities are specific in a young child's psychological behaviour: Stern found in his investigations on the development of perception of space in the infant[1] that for recognizing pictures or drawings of things, familiar to the infant, the most important criterion was the characteristic outline of the thing. Sometimes it was sufficient when the very characteristic parts of this outline alone were given, while colour, size and situation in space seemed to be irrelevant.

Volkelt[2] gives a report of experiments where the children had to copy simple geometrical patterns such as squares, rectangles and triangles. In reproducing the patterns the children tried to give the essential structure of those patterns and neglected small details.

Koehler has shown in fundamental experiments with chickens and apes, later repeated with young children, that the predominance of the whole over the detail is a feature of primitive psychological attitude.[3]

How highly a child is impressed by the "structure," the "physiognomy," is shown for instance in those frequent cases where young children are able to recognize by sight a great number of musical records of a music box without reading the title. (I remember a child of 5 years who easily recognized merely by sight more than 50 of these records, which certainly might be very hard for an adult.) One of those cases is described by Claparède.[4] He cites a child of 4 years who did not know letters and could not read music and yet managed to recognize a great number of songs from the appearance of the musical score.

It is evident that in this kind of perception, details which do not alter the "physiognomy" are not perceived, just as most people will not realize every detail in the face of a very familiar person. Many people, for instance, do not know whether the numbers on their watch are Roman or Arabic, although they see the face of the watch every day.

We now understand how easily a child may confuse letters and words of similar structure, one of the main mistakes common to beginners and backward readers. A fact which is often falsely judged as due to inattention or bad concentration! In the course of this investigation I learned that some children were not able to perceive small differences as in v-u, v-y. (cp. p. 45.)

[1] STERN, W., *Entwicklung der Raumwahrnehmung in der ersten Kindheit.*—*Ztschr. f. angewandte Psychol.*, 1909.

[2] VOLKELT, *Fortschritte der Kinderpsychologie*, Jena, 1926.

[3] A report of these experiments is given in W. KOEHLER, *Gestalt Psychology*, 1930, p. 167.

[4] *Archives de Psychol.*, 1908.

That predominance of the "whole" does not exclude that under certain circumstances the child will pay more attention to the detail of a thing. According to our knowledge of the psychological attitude of a child, we can assume that there will be a predominance of detail in all those cases where it represents something that may be essential to the child at that special moment. In the experiments of Stern, the representation of the lower part of a dog's face with its mouth was sufficient for the identification. Probably there will be often a difference between what is of importance for a child and for an adult.

One detail of less importance for a child seems to be the situation in space. Everyone knows from his own experience that young children are pleased to look in their picture book when it is turned upside down. It is further proved by the experiments and observations of child psychologists that young children recognize drawings and letters in an unfamiliar position much better than an adult.[1] It is well known that children are often able to understand mirror writing and to use it.

A similar observation in primitive people is described by Pechuel-Loesche.[2] He writes: "It is remarkable that the natives recognized very well pictures which were familiar to them even when they were turned upside down. And those of the natives, who understood reading—they were only a few—managed it both in the proper position and turned upside down."

This irrelevance of the situation in space in recognizing and writing letters has its effects on the process of reading and spelling. We saw that those letters which are a kind of mirror pictures of each other are not distinguished by the young beginner and remain so for most of the backward readers. (In the case described at the beginning of this paper we found that by this weakness of differentiation of the letters the child was unable to learn to read by the letter-syllable method.) From this fact it has been inferred that:

(1) for children and for primitive people the visual field seems to be less anisotropic than for an adult European,[3]

(2) that in their perception letters and drawings have a very solid structure just as have those things familiar to the adult which he recognizes irrespective of how they lie.

The "solidity of structure" is also proved by several investigations to be a specific quality in the young child's perception.

[1] Cp. W. Stern, *Ueber verlagerte Raumformen, Ztschr. f. angew. Psychol.*, 1909; Friedr. Oetjen, *Die Bedeutung der Orientierung des Lesestoffes für das Lesen, Ztschr. f. Psycholog.*, 1915; H. Frank, loc. cit.

[2] *Volkskunde von Loango*. Stuttgart, 1907.

[3] Cp. W. Koehler, *Gestalt Psychology*, p. 166, Fn. 1.

Meili[1] reports the following experiments by Sander-Heiss. One shows the child a construction which is built up of a certain number of blocks. Before the eyes of the child one of these blocks is moved and is mixed with other blocks at the side of it without the child seeing the place where it is put. In Experiment I the blocks where the moved piece is put are in a loose heap. In Experiment II these blocks represent a new structure. The child needs more time to find the moved block when it is a part of the new structure than when it is put into the loose heap. The difference of time in these two experiments is greater in the young children than in the older children and in the adult.

We must assume that the " solidity " of the *letter* as a " whole " interferes with its shading into a new unit, a word, just as it is impossible to see as a unit, for instance, a chair and a table. The isolation of the letter is intensified by its specific sound, because the sound of the single letter is not the same as when it is an element in a word (cp. p. 48).

In analysing, the " solidity " of the *word* as a " whole " interferes with its separation into its single elements, the letters. This difficulty in analysing we found in the various mistakes in spelling and writing from dictation, especially in the hopeless mixing up of the letters and in the inability to break up a word further than into its groups of letters.

Here we find again an analogy to the psychological behaviour of primitive people: " The Golahs of Liberia do not know that their language is made up of words. Their unit of consciousness is the sentence. Those sentences, like ours, contain a certain number of words, which Europeans can discriminate. The Golahs have never realized their existence."[2]

These samples of results from investigation on Child Psychology give an insight into the child's world of perception. They help us to understand the difficulties which a young child has to overcome when learning to read and to spell. They also imply the conclusion that the backward reader has remained on a relatively immature level of perception.

It is beyond the scope of this paper to discuss the methods of teaching reading or to comment upon the extensive literature on this subject. With reference to the discussed qualities of a young child's psychological attitude one must suggest that a method which starts from the " whole " (word or sentence), now widely used in English schools, is likely to be most successful. Since the backward reader is at the same stage of perception as the young child remedial measures should be on lines similar to those followed with beginners.

[1] *Archives de Psycholog.*, Vol. 23, 1931.
[2] Cit. from a report in Piaget, *Language and Thought of the Child*, 1926.

RÉSUMÉ.

UNE ÉTUDE COMPARATIVE ENTRE DES ENFANTS ARRIÉRÉS EN LECTURE ET DES COMMENÇANTS À LA MATERNELLE.

Par des recherches antérieures, faites dans des écoles allemandes, l'auteur était parvenu à l'opinion que la difficulté qu'éprouvent certains enfants en apprenant à lire est fondée sur la nature spécifique de la perception chez l'enfant et que dans sa perception l'arriéré en lecture est resté sur le niveau d'un enfant plus jeune.

Des tests appliqués en Angleterre à 35 enfants arriérés, et à 350 élèves de la Maternelle, ont démontré que les difficultés éprouvées dans la lecteur par les enfants arriérés étaient dues aux mêmes erreurs que celles commises par les commençants normaux.

Les enfants se trompaient, par exemple, en confondant des lettres qui ont la même forme mais dont l'une est l'image retournée de l'autre ; en confondant des lettres et des mots dont les formes se ressemblent, ils trouvent de la difficulté à construire on à analyser le mot.

L'auteur suggère que cette diversité d'erreurs se réduit à deux principes psychologiques qui sont des traits essentiels de l'attitude psychologique de l'enfant, qui concentre son attention sur la " structure " sur la " forme générale," et néglige certains détails, par exemple, la position dans l'espace et la " solidité " de la structure. Il y a une analogie avec le comportement psychologique des hommes primitifs.

Une méthode qui part de " l'ensemble " aura plus de chances de réussir chez les commençants normaux, et les efforts de redressement devraient adopter une méthode analogue.

ZUSAMMENFASSUNG.

EINE VERGLEICHENDE UNTERSUCHUNG VON KINDERN, DIE LESESCHWACH SIND UND ANFÄNGERN IN DER KLEINKINDERSCHULE.

Durch frühere Untersuchungen an deutschen Schulen gelangte Verfasserin zu der Vermutung, dass Leseschwäche bei normal intelligenten Kindern in der spezifischen Eigenart frühen kindlichen Wahrnehmens begründet ist, und dass das leseschwache Kind sich hinsichtlich seiner Wahrnehmungsfunktion auf jüngerer Stufe befindet

In England angestellte vergleichende Prüfungen an 35 lesegestörten Kindern und 350 Leseanfängern ergaben völlige Uebereinstimmung in der Art der Fehlleistungen. Diese bestanden in: Verwechseln von Buchstaben gleicher Struktur, die eine Art Spiegelbild darstellen, im Verwechseln von Buchstaben und Worten ähnlicher Struktur, in der Schwierigkeit der Wortsynthese und der Wortanalyse.

Diese Fehlleistungen erklärt die Verfasserin aus zwei für das kindliche Wahrnehmen charakteristischen Eigenschaften : 1. aus der für das Kind bestehenden Bedeutung der " Gesamtform," der Struktur " neben der Nichtbeachtung gewisser Einzelheiten, u.a. der Raumlage, und 2. in der " Strukturfestigkeit." Hierbei finden sich Analogien mit primitiven Völkern.

Eine Leselehrmethode, die mit dem ganzen Wort oder Satz beginnt, scheint dieser psychischen Gegebenheit am ehesten gerecht zu werden und sollte auch bei der Behandlung der Lesestörung angewandt werden.

THE USE OF MENTAL TESTS WITH UNIVERSITY WOMEN STUDENTS.

By A. BARBARA DALE[1]
(*Newnham College, Cambridge*).

I.—*Introduction.*
II.—*Other investigations on the use of mental tests in universities.*
III.—*Procedure.*
IV.—*General survey of results.*
(*a*) *Intercorrelation of tests.*
(*b*) *General level of I.Q.*
(*c*) *Effect of age.*
(*d*) *Speed factor.*
(*e*) *Correlation of tests with entry examinations.*
(*f*) *Test scores and teachers' estimates.*
(*g*) *Test scores and Tripos results.*
V.—*Analysis of results.*
(*a*) *Prognostic value of test scores in cases of misplacement on entry.*
(*b*) *Test scores as predictive of Tripos results.*
(*c*) *Relative performance of various subject groups.*
VI.—*Conclusions.*

I.—Introduction.

Every year about 400 candidates are examined for entrance to the women's colleges at Cambridge, and of these between one-third and one-half are offered vacancies; that is to say, having regard to the shape of the distribution curve of ability, which the test results show to be normal, the line between success and failure has to be drawn just where there is least difference in ability between individuals. It is obviously of great importance to make the selection as carefully as possible, especially since the number of vacancies is strictly limited, and too often a candidate cannot afford to wait for a second trial in the following year. There are two alternative examinations, the scholarship and the entrance examinations; both are specialized and candidates select one out of about seven groups of papers. After the award of scholarships and exhibitions a rank order list is made out for each subject, scholarship and entrance candidates being combined in one list, and a certain number of vacancies

[1] Mrs. F. P. White.

are then offered in each subject to those highest on the list. Unfortunately it is impossible to compare accurately the performances of candidates offering different subjects, and any accurate statistical work can deal only with small subject-groups varying in size between 10 and 30. The following investigation deals with students from one college only, so that these groups are further reduced in size.

Disregarding the effect of all disturbing factors, if the entry examinations were entirely successful from a purely academic point of view there would be perfect correlation between the rank order in them and that in the Tripos examinations three years later. In practice this would never be expected, of course, but a higher correlation might be expected than that revealed in Table I.

TABLE I.

SHOWING NUMBERS OF STUDENTS PLACED IN VARIOUS HONOURS CLASSES IN FINAL TRIPOS EXAMINATIONS.

	Total No.	*Class I.*	*Class II.*	*Class III.*
Scholars	42	15 = 35·7%	26 = 61·9%	1 = 2·4%
Exhibitioners	37	2 = 5·4%	31 = 83·8%	4 = 10·8%
Commoners	273	18 = 6·6%	187 = 68·5%	68 = 24·9%
All Students	352	35 = 9·9%	244 = 69·4%	73 = 20·7%

From this table, which shows the results over a period of five years, from 1926 to 1930 inclusive, it appears that the award of scholarships was by no means perfect if the criterion of good scholarship is a first class in the Tripos. There were during this period 20 exhibitioners and commoners who by gaining first class honours indicated that they were more worthy of scholarships than 27 scholars who only obtained 2nd or 3rd class honours. Moreover, 6 per cent of the scholars and exhibitioners, taken together, failed to get even into Class II ; probably about 20 per cent of the scholars and 50 per cent of the exhibitioners failed to get into the top half of the honours list, while on the other hand 75 per cent of the commoners obtained 1st or 2nd class honours, and probably 33 per cent were in the top half of the honours list. As no order within any Tripos class is published it is impossible to make these figures more precise. Yet, taken in conjunction with similar data published elsewhere,[1]

[1] VALENTINE, C. W. : *The Reliability of Examinations.*—Univ. of London Press, 1932.

these figures may be regarded as showing that the examination for entry to the women's colleges at Cambridge is at least as satisfactory as those in other colleges or at other universities, and this is the general opinion of those who have knowledge of the examinations and of the later work done by the successful candidates.

Other qualifications than those of a purely academic nature are naturally taken into account to some extent in the selection of candidates; a residential college needs a supply of students equipped with certain social and moral traits, and these traits are not always found in combination with the highest academic brilliance. The ideal student is one who, possessing good intellectual ability, possesses also the temperament and personality to develop and use her ability to the greatest extent. Moreover, such factors as home circumstances, health, the wrong choice of subject, and reaction to the heady stimulus of university life, may all militate against high correlation between results at the start and at the finish of a university course. It is not to be expected, therefore, that entrance results and Tripos results will ever show a correlation approximating to unity.

Apart from the effect of these uncontrollable factors, however, it is possible that the entry examinations might be so altered as to bring into the limelight still more satisfactorily those who are equipped with superior mental machinery, and leave in the outer shadows those who owe a spurious success to the efforts and excellence of their school teachers. The present investigation was undertaken for the purpose of showing whether the introduction of an intelligence test into the entry examinations would have this desired effect.

II.—OTHER INVESTIGATIONS ON THE USE OF MENTAL TESTS IN UNIVERSITIES.

Reports of other investigations with college students gave hope of positive results. In England Jennings White[1] at University College, London, studied especially the reasons for discrepancy between academic results and mental ability as measured by intelligence tests. The discrepancy was marked in many cases, but adequate reasons, based upon such factors as temperament and non-academic activities, were adduced in explanation; the author implied that, apart from such factors, the discrepancy would be small, and, in fact, that the academic results rather than the test results were at fault.

The results of a wider investigation by the late Dr. Victoria Hazlitt on students of Bedford College, London, was published in 1926,[2] and other

[1] This *Journal*, I, 3, 1931 and III, 1, 1932.
[2] HAZLITT: *Ability*.—Methuen, 1926.

investigators give the data obtained with students at other English and Scottish Universities, such as Bristol[1] and Aberdeen.[2]

In America the crop is much larger. The diagnostic superiority of mental tests over academic examinations for entry to Columbia University has been widely quoted.[3] Dr. Agnes Rogers[4] has found tests of great use in foretelling academic success or failure among students at Bryn Mawr College, Philadelphia, and tests have also been used for the same purpose at Yale and Harvard, to give but two further examples. In short, it can be said that in America generally, and on this side of the Atlantic to some extent, there is a belief founded on experience in the efficacy of mental tests in revealing the academic ability of college students.[5]

III.—Procedure.

Since 1926 almost all students entering Newnham College, Cambridge, totalling between 70 and 90 each year, have been tested at the beginning of their first term and again later during their university course. Attendance at the test was voluntary, but the great majority responded more or less willingly, and the usual attitude was one of interest and eagerness; in some cases there was evidence of nervousness even to the extent of affecting the result very considerably, and in one or two cases the results on the second test were very markedly superior to those on the first test. There were a few individuals who adopted an attitude of boredom or lofty superiority; there were others, especially among the students of English, whose scores were affected by a hypercritical analysis of the exact shades of meaning of words in the linguistic tests.

In 1926 there was no test on the market which appeared sufficiently difficult for a highly selected group; accordingly one was constructed, ideas and even items being collected from various sources such as the Stanford Revision Test for adults and the Columbia University Test. This test, which was called the Newnham College Test, contained nothing unusual, but was composed of more difficult elements than are usually found in a standard test. There was little possibility of giving it sufficient preliminary trial, and even after later revision there seemed insufficient proof of its reliability.[6] As other suitable tests appeared they were also

[1] Dobson: *B.J.P.*, XV, 2, 1924.

[2] Knight: *Intelligence and Intelligence Tests.*—Methuen, 1933.

[3] See especially Wood: *Measurement in Higher Education.*—World Book Co., 1923.

[4] *B.J.P.*, XV, 4, 1925.

[5] For a wider discussion and bibliography of American publications see R. Pintner: *Intelligence Testing.*—Univ. of London Press, 1924, ch. XII.

[6] After experience with other tests, however, the reliability of this test appeared to be about equal to that of the other tests used.

used, and the Newnham College Test was finally discarded in 1930 in favour of the National Institute Group Test 33 and the Cattell Test for adults. Other tests also used at various times were the Simplex Test, a test constructed for highly selected groups by Dr. P. E. Vernon, and also a test constructed and used with Bedford College students by the late Dr. Victoria Hazlitt.

Throughout the period records were kept of the placement of all students in the entry examinations and the classes obtained in the college or university examinations held at the end of each year. The total number of students dealt with was 610, of whom 370 had finished their degree course by July, 1933. It will be possible later to obtain a parallel set of data for the students still at college, and this may be used as a check on the conclusions drawn from this earlier set of results.

IV.—GENERAL SURVEY OF RESULTS.

(*a*) *Intercorrelation of Tests.*

The six tests used varied considerably in their make-up; some were of a more markedly linguistic nature, the Newnham College Test appeared to favour mathematicians, while the Simplex Test apparently gave a better chance to the less intelligent student. Bearing this in mind and also the highly selected and highly specialized nature of the group measured, very high intercorrelations between the test results are not to be expected, and the average value, $r = \cdot 60$ (PE$= \pm \cdot 06$), is appreciably lower than that quoted by other investigators for groups of college students. Table II shows the values of the intercorrelations between the various tests.

TABLE II.

SHOWING INTERCORRELATIONS OF TEST SCORES FOR GROUPS OF 53-80 INDIVIDUALS. FIGURES IN BRACKETS SHOW IN EACH CASE THE NUMBER OF CORRELATION COEFFICIENTS OF WHICH THE QUOTED COEFFICIENT IS THE AVERAGE.

	V.	*S.*	*N.I.I.P.*	*N.C.*	*C.*	*B.C.*
Vernon	—	·63 (2)		·60 (2)		
Simplex	·63 (2)	—		·60 (3)		
N.I.I.P.			—	·59 (2)	·56 (2)	·72 (1)
N. Coll.	·60 (2)	·60 (3)	·59 (2)	—		·45 (1)
Cattell			·56 (2)		—	
B. Coll.			·72 (1)	·45 (1)		—

When these coefficients are invested with a practical significance, it becomes obvious that grave injustice might result if the scores on any one test alone were to be used for purposes of admission to college apart from any academic examination. For example, if 25 per cent of a group of candidates were eliminated on the results of one test, one-third of these might fairly claim that on the results of a second test they would have been admitted. Again, if awards were made to the highest 25 per cent, even more than one-third of these might by a second test be deemed to have received undue credit.

(*b*) *General Level of I.Q.*

As deduced from the tables of norms published for various tests, the general mental level of the women students is undoubtedly high : for example, on the Cattell Test the intelligence quotients vary between 110 and 140, with an average of 127·5. On the National Institute Test the average score for 383 individuals tested is 156 out of a possible 193, a score of 120 usually being taken to indicate the minimum of general ability necessary for a college student. Analysis of individual scores soon reveals anomalies, however, of which it is sufficient to quote three examples.

(1) The lowest score in the Simplex Test was made by a student who, entering as a commoner, was awarded an exhibition on her first year's work at college ; she eventually gained 2nd class honours.

(2) An outstandingly good student who gained a major entrance scholarship and 1st class honours in both parts of the Tripos and was awarded the rare distinction of a Chancellor's Medal, made an undistinguished record in both tests, being 31st out of 84 in the Newnham College Test and 57th out of 72 in the Simplex Test.

(3) In the National Institute Test three students, one a commoner, one an exhibitioner and one a scholar, all satisfactory if not very distinguished students, scored below the minimum usually adopted as denoting just sufficient ability to attempt a university degree course of any kind.

In short, although the tests show a high general level of ability many individual cases can be found which indicate that the test score is very different from that which would have been expected from the academic achievement, or *vice versa*.

(*c*) *Effect of Age.*

Since the practice effect makes it inadvisable to use the same test twice on the same group of individuals, growth in intelligence can only

be measured by using different tests and by transforming the test scores into some absolute measure of ability, such as mental age or I.Q. The necessary tables for this were available in the case of two of the tests used, but the average mental age calculated for any one group was so much higher on the one test than on the other that it was impossible to regard both estimates as reliable. If the average intelligence of a year group was nearly constant from year to year it would be possible to get evidence of growth in intelligence during a year at college by a comparison of the performances of a first year group and a second year group in the same test. It was found, however, that any signs of growth were entirely masked by the differences between the average abilities of different year-groups, and by the lack of reliability of any one set of test scores.

(*d*) *Speed Factor.*

Criticism may be levelled at some tests on the ground that they demand an unequal speed of working in their different sections. For example, in the Cattell Test almost everyone was sitting idle before the time allowed on *Synonyms* had expired, and the same was true to a lesser extent in the section on *Completion of Sentences*, whereas very few finished the section on *Inferences*. In the National Institute Test, Section III proved too long, while the lengths of the other sections were apparently well adjusted to the times allowed. Adaptation to the necessary speed of working seems to be one of the main practice effects involved in test performance and it is a handicap to the inexperienced testee if one section needs quick working while another can be taken more slowly.

The relation between score and speed was investigated to some extent. In certain sets of results the number of items attempted was recorded as well as the number rightly answered ; the former number may be taken as a measure of speed, the latter as a measure of ability. Correlation coefficients between these two measures were as follows :

National Institute Test :	Number in group 87 :	coefficient	·91
	,, ,, 70	,,	·81
Newnham College Test :	,, ,, 78	,,	·72

In fact, the correlation on either test between speed and ability as measured in this way was decidedly higher than the correlation of ability as measured by two different tests. It was suspected on other grounds that the speed of working required in the Newnham College Test was too great, and the lower correlation of speed with ability in this case confirms the suspicion.

(*e*) *Correlation of Tests with Entry Examinations.*

Since separate papers are set for candidates offering each different subject and may be marked on different scales, entry rank can only be determined within each subject group, and not for the whole of a year-group taken together. These subject groups are small; indeed it was found impossible to deal statistically with any but the six main groups, Mathematics, Classics, Natural Sciences, History, Modern Languages and English. Cases in which the student changed her subject during her course were usually discarded. Within the subject groups, which varied in size from 5 to 20, the correlation between test rank and academic entry rank was very variable, coefficients ranging between —·34 and +·93, but of the 68 computed only 16 could be considered reliable, the others having a P.E. so large as to make them worthless. Of all the tests the Bedford College Test gave results closest to those of the academic examinations, with an average correlation of ·44 for 6 groups containing from 8 to 18 individuals; this is not surprising since the test was constructed to measure not only *g* but also scientific ability and literary ability as separate entities. The average correlation with the entry examination for other tests was below ·30. Considering each subject separately, the correlation was highest on the average for the English groups, being ·41, and lowest, ·07, for Classical groups; the average for each of the other four subjects was between ·23 and ·38.

(*f*) *Test Scores and Teachers' Estimates.*

Of an abortive effort to obtain reliable estimates of ability from lecturers, supervisors and directors of studies little need be said. Although the requirements were carefully explained and a system of grading laid down, chaos reigned in the returns, and there was little that could be regarded as of any value. For 75 cases the correlation coefficient between the teachers' estimate and the test score was ·05.[1]

(*g*) *Test Scores and Tripos Results.*

This brings us to grips with the main problem. If a test on entry is prognostic of academic success in a college course (as is found to be the case to a considerable degree in secondary schools), the average test score for students finally gaining 1st class honours should be considerably above the average for those gaining 2nd class honours, and this again should be higher than the average of the 3rd class students. Table III shows the extent to which this is true.

[1] An earlier investigation on the use of mental tests with students of a provincial university revealed a parallel example of this failure on the part of university teachers to estimate the general ability of the students with whom they deal. Their estimate of academic ability in their special subject, though variable, is much more accurate; this lends confirmation to the conclusion reached at the end of this article.

TABLE III.

SHOWING AVERAGE TEST SCORES FOR VARIOUS TRIPOS HONOURS CLASSES. THE NUMBER OF INDIVIDUALS IN EACH GROUP IS INDICATED IN BRACKETS.

Test.	*No. of Cases.*	*Average Scores.*		
		Class I.	*Class II.*	*Class III.*
N. Coll., 1926-28	193	72·5 (20)	71·3 (122)	70·8 (41)
N. Coll., 1929-30	132	67·0 (14)	61·2 (90)	60·2 (28)
N.I.I.P.	135	157·3 (15)	155·1 (90)	151·4 (30)
Simplex	54	141·3 (6)	136·1 (38)	135·6 (10)
Simplex (omitting Maths)	48	141·3 (6)	134·1 (34)	131·7 (8)

While there is a steady progression from class to class, the difference in score between adjacent classes is usually small and there is much overlapping of individuals in neighbouring classes. It was suggested that this might be due to the inequality of standard between different subjects; for example, a Class II in Mathematics might be considered as equivalent to a Class I in some other subject, and this theory is supported by the alteration in averages caused by the omission of Mathematics, as shown in the last line of Table III. Accordingly average scores were deduced for each subject separately, and these are given in Table IV.

TABLE IV.

SHOWING AVERAGE SCORES IN N. COLLEGE TEST FOR VARIOUS TRIPOS HONOURS CLASSES IN SEPARATE SUBJECTS OVER A PERIOD OF 5 YEARS. THE NUMBER OF INDIVIDUALS IN EACH GROUP IS INDICATED IN BRACKETS.

	Class I.	*Class II.*		*Class III.*
		Div. 1.	*Div. 2.*	
Math.	86·5 (3)	79·3 (20)		70·2 (20)
Classics	72·5 (4)	74·0 (17)		67·0 (7)
Nat. Sci.	71·6 (14)	73·0 (43)		68·0 (18)
History	81·1 (1)	65·4 (11)	63·4 (22)	62·6 (5)
		64·0 (33)		
Mod. Lang.	65·0 (5)	68·9 (14)	62·3 (20)	60·3 (5)
		65·0 (34)		
English	75·7 (3)	70·6 (17)	69·4 (13)	65·5 (5)
		70·1 (30)		
All subjects	72·8 (30)	70·1 (177)		67·3 (60)

Greater discrepancies occur here between test score and academic class, partly no doubt owing to the smaller numbers contributing to each average, but possibly also suggesting that the part played by *g* in achieving academic success varies considerably in different subjects. For example, it appears that Modern Languages depend more for success on specific factors, but Mathematics more purely on *g*. In especial do the individual scores of Class I vary. It would seem that the highest achievement in any special academic subject is dependent more largely upon specific factors, and perhaps also upon temperamental factors, than upon the general factor that is measured by the tests. This finding is strengthened by the fact that Valentine[1] arrives at a somewhat similar conclusion working from a different type of datum, namely, the Tripos performances of undergraduates who, having changed their subject during their University course, offered a different subject in their final examination from that taken on entrance to the University.

V.—Analysis of results.

(*a*) *Prognostic Value of Test Scores in cases of Misplacement on Entry.*

A comparison of Tripos results with lists of rank order in entry examinations shows that about one student in every six is placed very differently in the Tripos from what might have been expected from her entry placement. Often, of course, fuller investigation of the individual case gives sufficient explanation of the discrepancy, but there are still a good many cases in which one must conclude that either one set of examiners or the other was mistaken in their rating.

Table V shows data for three subject-groups of candidates admitted in a certain year. If Tripos results agreed exactly with entry ranking the second column under each subject would show a gradual and regular descent from Class I to Class III. This is hardly to be expected in practice, but there are a certain number of cases of outstanding discrepancy, and these have been termed "misplacements"; their determination, for lack of a better method, has been by inspection only; they are marked "M" in Table V. The History list shows one possible case of misplacement, but the number of marks between divisions 1 and 2 of an honours class may be so small as to make this a doubtful case. In the Modern Languages list there are two clearer cases in numbers 2 and 7; in the Natural Sciences list there is a good deal of irregularity and numbers

[1] Valentine: *Reliability of Examinations.*—Univ. of London Press, 1932, p. 146, 158-9; *see also* Wilson, J. H.: This *Journal*, Vol. III, Pt. II, 1933, p. 106, whose enquiry indicates the great importance of specific factors for success in a School Certificate Examination.

7 and 10 may certainly be counted as misplacements. Number 10 can be fully explained by the circumstances of the individual case, but no such explanation is forthcoming to rectify the position of number 7.

TABLE V.

SHOWING CASES OF APPARENT MISPLACEMENT ON ENTRY AND OF MARKED DISCREPANCY BETWEEN TEST RANK AND ACADEMIC RANK.

History.			*Mod. Lang.*			*Nat. Sci.*		
Entry Rank.	*Tripos Class.*	*Test Ranks.*	*Entry Rank.*	*Tripos Class.*	*Test Rank.*	*Entry Rank.*	*Tripos Class.*	*Test Rank.*
1	I	5	1	I	2	1	II	10*
2	II_1	6	2 M	II_2	5	2	II	9*
3	II_2	10*	3	II_1	6	3	I	4
4	II_2	11*	4	II_2	9*	4	II	1
5	II_2	8	5	II_2	4	5	II	2
6	II_2	2	6	II_1	8	6	II	5
7 M	II_1	7	7 M	III	12*	7 M	I	6
8	II_2	4	8	II_2	1*	8	II	3*
9	II_2	3*	9	II_2	3*	9	II	11
10	II_2	9	10	II_2	7	10 M	I	12
11	II_2	1*	11	II_2	10	11	III	6*
12	II_2	12	12	III	11	12	—	8
						13	III	13

Table V also shows the test rank of each individual, the rank being based on the scores made in two separate tests. It is evident that in both misplacement cases in the Modern Languages list the candidate made a poorer showing on a test than on academic papers; hence a test at entry might have proved useful for the prognosis of Tripos results. In the cases of the History and Natural Sciences misplacements, however, a test would have revealed little or nothing. If the test performance is studied in every case of misplacement and in all subjects, it is found that in about 50 per cent of the cases it would have given a true indication of error in entry placement; in about 20 per cent of the cases it would

have been definitely misleading; and in the remaining 30 per cent it would have shown such close agreement with the academic performance at entry as to offer no further guidance.

(*b*) *Test Scores as predictive of Tripos Results.*

If a test were to be introduced into the entry examination and used as a check on the academic marks, all cases would have to be inspected and not only cases of misplacement which, indeed, only become evident three years later. Those cases would be of special interest in which the test rank was markedly different from the entry rank. "Markedly different" can in this case be defined, although in a purely arbitrary way. In the following analysis cases are considered to show marked discrepancy where the ranking on a test differs from that on the academic examination by more than one-third of the total number of individuals in the group. It was considered that this allowed sufficient latitude to cover all chance discrepancies in ranking.

In Table V the History list shows four cases in which the difference in ranking in the first and third columns lies outside these limits; these are marked by an asterisk. There are also four such cases in each of the other two lists. In the case of numbers 3 and 4 on the History list, the test rank suggests that the entry rank is too high, and this is borne out by the undistinguished Tripos result three years later. In the case of numbers 9 and 11, however, the test rank is definitely misleading as a forecast of Tripos success. In the Modern Languages list the test rank seems to have prognostic value in the case of number 7, to be of some use with number 4, but to be misleading with numbers 8 and 9. In the Natural Sciences list the test rank would have been helpful in the case of individuals 1 and 2, but misleading in the case of 8 and 11.

Analysing the rankings of five generations of students in this way, it is found that out of the 327 individuals considered there is marked discrepancy between the entry rank and test rank in 27 per cent of the cases, and that the test rank has prognostic value in about one-half of these discrepant cases. In fact, the effect of chance in deciding whether the test rank is of any significance seems altogether too marked to be ignored. A more detailed analysis shows that the test rank is rather more reliable when it is higher than the entry rank than when it is lower; it would, therefore, seem rather safer to promote on the ground of a good test score than to penalize a candidate for a poor test score, but there is not sufficient support for either proceeding on the evidence of this investigation.

It cannot be claimed, therefore, that an intelligence test, or even two different intelligence tests, would be of much use to the examiners in the selection of candidates for entry to the women's colleges at Cambridge. In about 73 out of every 100 cases the test performance differs from the academic performance at entry by too little to warrant a raising or lowering of entry rank on its account; in about 14 per cent of the cases a test would have proved useful prognosis of academic success, but in the other 13 its evidence would have been false. Working on the principle of using a test score for promotion only, it could be used with a rather greater degree of safety; in about 6 cases in every 100 the examiners might be misled, but they would be helped to a right judgment in three times this number. In either case the considerable amount of extra time, trouble and expense involved would not seem to justify the very slight results obtained.

(c) *Relative Performance of various Subject Groups.*

It has already been shown (Table IV, page 67) that the average test scores for subject groups vary considerably. One of the least variable of all the results arrived at in this investigation is the rank order of the subject groups with regard to their average intelligence, and this is shown in Table VI, computed from three different sets of data. To give as high a degree of accuracy as possible the scores on various tests have been combined, each so weighted as to contribute equally to the total. The number of individuals in each group is recorded in brackets; no numbers are recorded in the last column since there are about twice as many scores recorded on the National Institute Test as on the Cattell Test.

TABLE VI.

SHOWING AVERAGE TEST SCORES FOR VARIOUS SUBJECT GROUPS.

Subject.	*N. College Test (5 years).*	*Combined Score on Simplex, Vernon, and N. College.*	*Combined Score on N.I.I.P. and Cattell.*
Mathematics	75·6 (43)	452 (34)	480
Classics	70·2 (28)	451 (20)	478
Nat. Sci.	71·5 (75)	440 (44)	472
English	70·0 (38)	417 (32)	463
Mod. Lang.	64·5 (44)	398 (31)	461
History	64·3 (39)	392 (27)	460

Mathematics heads the list in every case; except on the Newnham College Test Classics is a close second. In every case History is lowest, with Modern Languages not far above. The rank order on any single test sometimes shows an interchange in position of Mathematics with Classics and of the last three subjects on the list, but almost always there are two main groups, Mathematics and Classics above, English, Modern Languages and History below, with Natural Sciences lying between them.

Various reasons can be suggested in explanation.

(1) A test may favour mathematicians more than historians. It is obvious from the data obtained that certain tests were favourable to certain specialists, e.g., the Newnham College Test to mathematicians, the Simplex Test to the historians. But this does not explain why mathematicians should make a better performance on tests which are mainly linguistic, and other reasons must be sought.

(2) In certain subject groups the students are more highly selected than in others: this is a statement of fact. In girls' schools there is a severe weeding out of would-be mathematicians and classicists after the School Certificate stage, and on the results of the college entry examinations the weeding out is more severe in these two subjects than in any other. But in Natural Sciences a higher percentage of candidates is admitted than in any other subject, and yet the average ability of this group places it more than half-way up among the subject groups. Hence selection cannot be the sole cause of this constant difference of ability.

(3) Certain subjects demand for successful tackling a higher grade of general ability than certain other subjects which appear to need a relatively lower amount of *g* but a greater measure of one or more specific factors. It is more than possible that History, Modern Languages, and English are more dependent than the other subjects on specific factors which are not called into play by a test of general ability.

VI.—Conclusions.

In comparison with equivalent data obtained from secondary schools and from American colleges, the data collected during eight years at Newnham College present an almost startling lack of regularity. In very many minor particulars repetitions with parallel sets of data lead to different results; conclusions based on data collected from the 1926, '27, and '28 groups are refuted by similar conclusions for the '29 and '30 groups.

Various reasons can be suggested in explanation.

(1) For many of the calculations the groups involved are necessarily very small and consequently the reliability is low.

(2) In all cases the groups are highly selected. There are few, if any, other investigations in which the I.Q. of almost all individuals is above 120, and it is a fact that needs little emphasis that the more highly selected the group the less reliable do the measures become. In almost all cases the distribution curve of scores for a group is fairly normal, though slightly skewed towards the upper end, but always the average of the scores is high on the test scale. This would go far to account for the lowness of reliability compared with that of data from schools and from the colleges of America, which include a much greater percentage of the population.

(3) In selecting the subject matter for a test an attempt is made to select material which should, *ceteris paribus*, be equally familiar to all the testees. Although perhaps little of the material was wholly unfamiliar to the students tested, it seems probable that specialization of study during the previous two or three years must have produced great differences in the ease with which various individuals could tackle any one section of a test. Familiarity with the type of task to be undertaken, specialized mental interests and habits must all have played their part in causing differences between the reactions of individual students towards the mental situation in which each test placed them.

(4) Experience in testing individuals of different ages suggests that in general extraneous effects of temperament, such as nervousness and inability to get down quickly to an unfamiliar task, which to some extent smacks of the junior school, increase with increasing years. Adults of some years' standing tend to make a lower score in a mental test than they would have done some years earlier. Students are not so far removed from the golden age of infancy, but the difficulty of settling down to apparently trivial tasks without waste of time was apparent in some cases. In others a tendency to split hairs and a desire to define the meaning of a word far more accurately than the composer of a test ever intended led to waste of time and introduced a disturbing feeling of inaccuracy and consequent dissatisfaction with the task.

All these factors tend to make the university student's mind less easy to gauge with the somewhat rough and ready instrument that the tester has to use. And in every case the factor is one which is less pronounced in the case of school children or the rather younger and less highly selected students of a provincial university or of an American college.

It appears, therefore, that even a difficult and carefully standardized mental test is of no great use in forecasting academic success within a highly selected group of university students. While it is clear that a high standard of general ability is needed to obtain admission to the women's

colleges at Cambridge, an extra amount of general ability above this standard appears to be only one factor in the making of a good academic record; certainly other factors enter to a considerable degree. To what extent these factors are mental and to what extent temperamental this study has not attempted to determine. The point to be emphasized is that a successful academic career depends as much upon various specific factors as upon the general mental factor that is measured by the tests.

SUMMARY OF RESULTS.

(1) The test results show that Cambridge women students are a highly selected group, the I.Q. varying between 110 and 140, with an average of 127·5 as measured by the Cattell Test for Adults; the following results and conclusions only apply to a highly selected student group.

(2) No improvement in ability while at college could be measured.

(3) The correlation between speed and ability as measured by one test is greater than the correlation of ability as measured on two separate tests.

(4) The correlation of test score with performance in the college entry examinations varies considerably in different groups, but most of the coefficients are unreliable. The average value is below ·30 for every test except the Bedford College test, in which it rises to ·41.

(5) The average test score for students gaining Class I in their final Tripos examination is slightly higher than that of Class II students, and this again slightly exceeds the average for Class III students, but the differences are not large, and there is discrepancy in many cases between placement in the test and in the Tripos examination. The test scores of Class I students show an especially wide distribution.

(6) Marked discrepancy between performance in the test and that in the entry examinations occurs in about 27 per cent of the cases admitted to college. In about one-half of these the test has prognostic value with regard to placement in the final degree examinations; in the other half it is definitely misleading. Test results are more often of prognostic value in cases where they are superior to the academic results than when they show a lower standard.

(7) Academic success in college entrance and final degree examinations appears to depend as much upon specific factors as upon a general mental factor. Certain academic subjects seem to depend more largely than others on a high grade of general ability, while others need a greater measure of one or more specific factors.

(8) Finally, the selection of students best fitted to pursue a highly specialized degree course does not appear to be made easier or more reliable by the use of mental tests.

RÉSUMÉ.

L'EMPLOI DES TESTS D'INTELLIGENCE CHEZ DES ÉTUDIANTES D'UNIVERSITÉ.

On appliqua à chaque étudiante entrée à Newnham College, Cambridge, pendant une époque de huit ans, des tests d'intelligence et l'on compara les résultats de ces tests avec ceux des examens universitaires, passés en y entrant, et pour obtenir le diplôme final de l'Université. Les résultats des tests indiquèrent un I.Q. moyen élevé ; leur corrélation avec les examens d'admissibilité était en général bas mais variable. Une contradiction marquée entre le résultat des tests et celui de l'examen d'admissibilité se manifesta chez un quart environ des sujets, mais ce ne fut que chez la moitié de ceux-ci que le résultat des tests fournit un pronostic plus exact du succès universitaire. On en recueillit le témoignage indiscutable que le succès dans le travail supérieur et spécialisé de l'université dépend autant de facteurs intellectuels spécifiques que d'un facteur général, et que les tests d'intelligence ont peu de valeur dans le choix des étudiants aptes à faire des études spécialisées d'université.

ZUSAMMENFASSUNG.

DIE ANWENDUNG VON INTELLIGENZPRUFÜNGEN BEI UNIVERSITÄTS-STUDENTINNEN.

Seit acht Jahren wurde jede Studentin, die in das Newnham College, Cambridge, eintrat, Intelligenzprüfungen unterworfen, und die Testergebnisse wurden verglichen mit denen der Universitätsprüfungen, die bei der Aufnahme und für die Erlangung des akademischen Grades abgehalten wurden. Die Testergebnisse deuteten einen hohen Durchschnitt des Intelligenzquotienten an ; ihre Korrelationen mit den Eintrittsprüfungen waren meistens niedrig oder veränderlich. Deutliche Widersprüche zwischen dem Testergebnis und dem Ergebnis der Eintrittsprüfung waren bei ungefähr einem Viertel der Fälle vorhanden ; aber nur bei der Hälfte von diesen galt das Testergebnis als die bessere Voraussage für den Erfolg des Studiums. Es bestand zweifelloser Beweis für die Tatsache, dass der Erfolg bei höherer und fachmännischer Arbeit an einer Universität ebenso sehr auf spezifischen geistigen Faktoren als auf einem allgemeinen Faktor beruht, und dass Intelligenzprüfungen von geringem Wert für die Auswahl von Studentinnen sind, die sich einem Spezialgebiet widmen wollen.

ON THE MEASUREMENT OF "PERSEVERATION."

By RAYMOND B. CATTELL.

I.—*Introduction.*
II.—*Considerations in designing "P" tests.*
III.—*The results of inter-correlation.*
IV.—*Differences due to age, sex, and intelligence.*
V.—*The effects of practice and fatigue.*
VI.—*Summary and notes on test standardisation.*

I.—Introduction.

Although there is still considerable discussion concerning the ultimate nature of the Perseveration measured by "P" Tests, the measurements themselves have already shown sufficient correlation with pathological conditions (mania, melancholia, and dementia præcox) and differences of personality[2 3 4 5] to justify their use in clinical practice. A more thorough examination of the testing technique and an improvement of the tests used is therefore necessary. An approach to this is made with the present work.

Earlier research has shown that the same general factor of perseveration runs through both sensory and motor tests. Since the latter are generally easier to administer and require less apparatus, we aimed mainly at developing motor tests, inserting only one non-motor test as a check on previous research.

Stephenson[6] has recently pointed out that the "P" Tests so far used may be divided into three types according to the manner in which they attempt to get at Perseveration.

Type A (which we shall call "alternation" tests) compares the speed on each of two straightforward activities with the speed on a new activity consisting of a rapid alternation of the two previous activities, e.g. (1) SSSS; (2) 2222; (3) S2S2S2.

[2] Cattell, R. B. (1933): *Temperament Tests. II, Tests.—Brit. J. Psychol.*, XXIV, 20.

[3] Pinard, J. W. (1932): *Tests of Perseveration. I, Their Relation to Character.—Brit. J. Psychol.*, XXIII, 5.

[4] (1932); *Tests of Perseveration. II, Their Relation to Certain Psychopathic Conditions and to Introversion.—Brit. J. Psychol.*, XXIII, 114.

[5] Stephenson, W. (1931): *Studies in Experimental Psychiatry. II, Some Contact of "P" Factor with Psychiatry.—Journal of Mental Science*, LXXVIII, 315.

[6] Stephenson, W.: *An Introduction to So-called Motor Perseveration Tests.—Brit. J. of Educational Psychology, IV*, II, p. 186. 1934.

Type B, which we shall call "creative effort" tests, attempts to measure an inertia effect by comparing the speed on some old-established habit with the speed on some new, and generally conflicting, way of arriving at the goal of the old habit, e.g., the colour test shortly to be described, writing e's, w's, etc., with a reversed stroke movement.

Type C, which Stephenson called " direct P tests " simply aims at measuring the hindrance and disturbance and general lag of performance resulting from changing over from one kind of activity to any different but reasonably equivalent activity, e.g., cancelling X and O to cancelling H and I, and Cathcart and Dawson's Persistence Test[1]. Previous to this explicit division, the present writer had recorded,[2] with surprise, that " P " seemed to be better measured by tests involving a breaking-away from old established habits (creative effort type) than by tests (" alternation " and " direct " tests) which, according to the theory of perseveration then extant, should have been the best tests. In the same research it was found that direct tests were practically useless. With this finding Stephenson's recent work agrees.[6]

II.—CONSIDERATIONS IN DESIGNING " P " TESTS.

The experimental battery of " P " Tests to be tested out with a view to improving technique were designed with an eye to the following aims and considerations. They were tried out on both adults and children.

(1) *Invention of new tests to throw light on meaning of " P."*

To try out among older tests a number of entirely new forms, definitely planned to decide between conceptions of perseveration so far obtained by the experimenter, this not merely in the hope of arriving at a better test, but also with the object of throwing some light on the nature of " P."

(2) *Comparison of "alternation" and "creative effort" principle.*

In particular to decide whether tests of Type A (alternation) or of Type B (creative effort) are more saturated with perseveration. Within alternation tests themselves considerable variety is possible. Thus the constituent activities have hitherto been well habituated activities, e.g., the writing of S in the S's Test or of abc in the abc Test. A test was now

[1] CATHCART, E. P. and DAWSON, S. (1928): *Persistence—a Characteristic of Remembering.—Brit. J. Psychol.*, XVIII, 26.

[2] CATTELL, R. B. (1933): *Temperament Tests. II, Tests.—Brit. J. Psychol.*, XXIV, 20.

[6] STEPHENSON, W.: *An Introduction to So-called Motor Perseveration Tests.—Brit. J. Educational Psychology, IV*, II, p. 186, 1934.

devised in which the conflicting and alternating activities were themselves quite new, i.e., no question of old habits *v.* new habits would arise at all. In the first activity a single smooth curve was made without taking pencil from paper. The second activity with which this would alternate was strikingly different, being made by three short independent strokes. The whole was arranged on the following plan.

1	∞ ∞ ∞ ∞	15 secs.	X activity.
2	± ± ± ±	,, ,,	
3	∞ ∞ ∞ ∞	,, ,,	
4	± ± ± ±	,, ,,	
5	∞ ± ∞ ±	,, ,,	Y activity.
6	∞ ± ∞ ±	,, ,,	
7	∞ ± ∞ ±	,, ,,	
8	∞ ± ∞ ±	,, ,,	

For comparison with this we inserted an alternation test in which both the components were old habits as follows :

1	abcd abcd	15 secs.	X activity.
2	ABCD ABCD	,, ,,	
3	abcd abcd	,, ,,	
4	ABCD ABCD	,, ,,	
5	aAbBcCdD	,, ,,	Y activity.
6	,, ,, ...		
7	,, ,, ...		
8	,, ,, ...		

Obviously a third form is possible, namely one in which the first activity is old and the second one new. This, though an alternation test, involves the " creative effort " principle :

1	234 234 written normally	15 secs.	X activity.
2	234 234 each figure begun at the opposite end from the usual one	,, ,,	
3	As (1)	,, ,,	
4	As (2)	,, ,,	
5	234 normal, 234 with reversed stroke, etc.	,, ,,	Y activity.
6	,, ,, ,, ,, ,,	,, ,,	
7	,, ,, ,, ,, ,,	,, ,,	
8	,, ,, ,, ,, ,,	,, ,,	

Contrasting with these three alternation tests was a test purely of the creative effort type. This test was none other than the first part of the above test scored by contrasting the performance on lines 2 and 4 (creative Y activity) with the score on lines 1 and 3 (old habits, X activity).

(3) *Eliminating correlations with intelligence.*

Many of the early batteries of " P " Tests were open to criticism on the ground that much of the inter-correlation was spurious and, in fact, due to " G." The alternating or creative activity (according to whether the test was of Type A or Type B) caused a slowing-down in such tests,

not merely because of hindrance and inertia, but also on account of the intellectual difficulty which the subject experienced in trying to grasp the relationships (mainly spatial) involved in the new activity. High Perseveration thus tended to be associated with low " G ", especially in groups where " G " was very low, e.g., with feeble-minded persons; for the relations are rarely difficult enough to hinder adults or intelligent children.

Differences of " G " may intrude in these tests in two ways, both of which may be illustrated by the S's test. Firstly the formation of the reversed S requires eduction of correlates. Ability to recognize or draw mirror images has indeed frequently been used as a test of intelligence. Secondly, the new activity, writing S Ƨ S Ƨ S Ƨ may be differently treated by people of differing intelligence. It may be regarded simply as an alternation of old and new shapes, or it may be perceived as an entirely new " gestalt." The more intelligent subjects are decidedly more prone to the latter; they write not simply a series of S's but a series of shapes as follows: SƧ, SƧ, SƧ. A good P Test should avoid the possibility of such new shapes, especially if it is intended for use with children, and the alternation tests so far described were designed to avoid it.

We required one more alternation test and, as the S and Z tests were unsuitable on this ground, a new test was devised on the following plan. This test is called " aitches."

1	H	H	H	H	H	.....	15 secs.	
2	H	H	H	H		.....	" "	X activity.
3	H	H	H	H		.....	" "	
4	H	H	H	H		.....	" "	
5	H	H	H	H	H	.....	" "	
6		"		"		.....	" "	Y activity.
7		"		"		.....	" "	
8		"		"		.....	" "	

(4) *Arriving at the best time intervals.*

From the present writer's observations, it would seem that the exercise periods (alike for X and Y) have hitherto been unnecessarily long and thus have fallen into the danger of causing fatigue effects, if the test is carried out with the proper degree of effort. The required mental set can be attained and the habit mechanisms adequately excited in considerably less than one or two minutes. Fifteen seconds was chosen as the optimum period. Four periods of fifteen seconds were given on each of the X (unmixed) activities and four periods of fifteen seconds on the Y (alternating) activities. All tests (except colour reversal) were of this pattern and duration (two minutes), in order that correlation comparisons might be fairly made between them. The rest intervals between

the period were made as short as possible compatible with the prevention of fatigue, since with longer intervals there is time for the perseveration effect to die down or for changes of attitude to occur. Allowing for the necessity of reminding the subject of the instructions, we found that seven seconds was the shortest practicable rest interval.

A second modification of timing arose from the notion that in any alternating test a better P measurement might be obtained by disregarding the first two of the four X activity periods and the last two of the four Y periods, since the perseveration effect will not be so marked in these, and their inclusion will consequently attentuate the score. For high perseverators will be a little slow in warming up to the X activities, and if the first two periods are included they will not score so highly on X relative to Y as a high perseverator should. Similarly towards the end of the Y activities such a subject will be favoured by his high perseveration and his Y-activity would not be scored so low as if the last two periods were omitted, i.e., his " P " score will not be as extreme as it might be.

Two of the alternating tests were therefore scored on both systems, (1) on all eight periods, (2) in a shortened form on the four middle periods, for comparison.

(5) *Standardizing the effort and the quality of performance.*

As Stephenson has pointed out, the subject, in face of the greater difficulty offered by the Y activities, may attempt to keep up the quantity of output by becoming increasingly inattentive to quality, thereby giving a false impression of his perseveration. Stephenson's method of making the subject write between standard lines, however, is not entirely satisfactory, since different subjects have different natural sizes of writing, and a fresh difficulty is introduced for them in conforming.

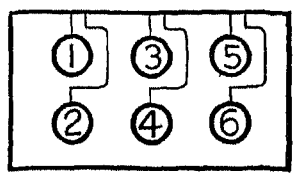
Pinard found, when using no such technique that " P " tests tended to get more reliable with repetition and that the first test was almost valueless. As the present writer has pointed out[2] such a result seems unlikely if proper precautions are taken, since from its very nature, a " P " test should be most effective when quite novel to the subject. The precautions here constituted (*a*) writing on a standard form, but not with restricted size of writing, (*b*) placing a standard model (a sheet already completed) before the subject to indicate the standard required, (*c*) having instructions as to speed and quality *perfectly* clear before subject begins, (*d*) repeating these instructions nevertheless as the test proceeds, e.g., " Now small abc," " As quickly as possible " (this constantly reiterated).

[2] CATTELL, R. B. (1933): *Temperament Tests. II, Tests.—Brit. J. Psychol.*, XXIV, 20.

To test Pinard's statement, the same test battery was administered twice to one group of subjects and the inter-correlations on the first and second occasion were compared.

(6) *Producing a test with more mechanical scoring.*

One of the bugbears of " P " test work is the laborious counting of items written. If the " P " test, instead of being a written test on paper, could be carried out by movements on a machine, this difficulty would vanish since the machine could be fitted with a meter to count the movements. A still greater advantage is that a machine answers fully the demands of stipulation (5) above, in that it could be made to present definite standardized activities which the subject could not shirk or modify, A machine was therefore devised consisting of six typewriter-like keys in two banks of three, thus :



The first activity consisted in depressing the keys (with the forefinger) in the order 2, 3, 4, 5, 2, 3, 4, 5, etc., and the second in the pattern 2, 5, 6, 1, 2, 5, 6, 1, etc. Not only was the spatial pattern different, but each key offered a different resistance to pressure and a difference of trajectory ; otherwise the plan of the test was exactly the same as for the others, viz. :

1	2345	2345	.....	15 secs.	X
2	2561	2561	.....	" "	
3	2345	2345	.....	" "	
4	2561	2561	.....	" "	
5	2345	2561	.....	" "	
6	"	"	.....	" "	Y
7	"	"	.....	" "	
8	"	"	.....	" "	

This instrument we shall refer to as a Perseverameter.

(7) *To confirm that motor tests of " P " have not a factor in common differentiating them from other " P " Tests.*

As a representative of non-motor tests, the Colour Reversal Test was included, as it also provides a good example of a purely " creative

effort" (Stephenson's B Type) Test. On a large sheet, having rows of red, blue, green, yellow spots, each the size of a halfpenny and arranged in chance order, the subject was asked to run a pencil along the rows picking out and naming the reds and yellows. For the Y activity he repeated this performance, but always called the red "yellow" and the yellow "red."

III.—The results of inter-correlation.

"P" score was calculated as $\frac{\text{X score}}{\text{Y score.}}$ Errors in X or Y were simply deducted from the X or Y total. These scores incidentally gave a slightly skewed logarithmic type of distribution curve scattering more widely on the upper scores, but the measurements were re-scaled to a normal curve before correlating by means of the product-moment formula. Our first set of correlations arise from the testing of 52 adults, all but two of whom were engaged in one or another of the learned professions.

Inter-correlations of adult "P" tests.

	Reverse Stroke (Alternating).	*Alphabets.*	*Aitches.*	*Reverse Stroke (Creative).*	*Perseverameter.*	*∞ and ±*	*∞ and ± (Curtailed).*	*Perseverameter (Curtailed).*	*Colour Naming.*
Reverse Stroke (Alternating) ..		·40	·26	·52	·34	·48	·41	·32	·12
Alphabets			·39	·29	·36	·19	·25	·23	–·07
Aitches				·12	·25	·17	·13	·20	·19
Reverse Stroke (Creative)					·37	·32	·45	·31	·09
Perseverameter						·18	·17	·75	·05
∞ and ±							·69	·18	·12
∞ and ± (Curtailed)								·14	·08
Perseverameter (Curtailed)									·06
Colour Reversal									

Largest P.E., ·09; smallest ·07.

	Mean Correlation of each Test with the other seven or eight.
Reverse Stroke (Alternating)	·320
Alphabets	·254
Aitches	·252
Reverse Stroke (Creative)	·238
Perseverameter	·236
∞ and ±	·228
∞ and ± (Curtailed)	·208
Perseverameter (Curtailed)	·198
Colour Reversal	·082

The mean correlations of each with all the others (but excluding from the total the correlation of each with its own modified form, e.g., ∞ and ± with ∞ and ± curtailed) are as shown below. The six tests (all except the modified forms) arrange themselves in hierarchical order as follows:

	Mean Correlation of each Test with the other five.
Alphabets	·30
Perseverameter	·24
Reverse Stroke (Creative)	·24
Aitches	·22
∞ and ±	·20
Colour Reversal	·11

A dozen tetrad differences, selected at random, were examined. Three were larger than their probable errors. This seemed to arise from three particular correlations being unduly high; Reverse Stroke "Creative" with Perseverameter, Colour Reversal with Aitches and Colour Reversal with ∞ and ±. These so obviously have nothing in common (indeed they are the most mutually remote tests possible) that this was disregarded, the tetrad differences being in any case less than twice the P.E. It is interesting that the two B Type Tests (creative effort) have nothing in common above what is common to all (as far as these tetrads show).

Our ultimate aim was to compare the "P" saturation of the various tests. No complex and lengthy mathematical procedure seemed justified at this point and we proceeded to get the amount of saturation by determining the mean correlation of each test with all the other tests. Before doing this however we had to correct for the relative shortness of the curtailed test (reversed stroke, perseverameter, and ∞ ±) which uncorrected, would have given them lower correlations than they should have had. Here the Spearman Brown prophecy formula was employed, although strictly it is intended for arriving at the reliability of a longer test from the reliability coefficient of a shortened test. If, however, we may regard the above inter-correlations as the reliability coefficients of repeated measure-

ments of perserveration, it seems permissible to use this formula to arrive at the inter-correlation that would exist if one or both of the tests could be made longer than it actually was. We, therefore, calculated from the mean correlation of the shortened test with the other tests what its mean correlation would have been if it had been of the same length as the other tests. Approximately corrected in this way the new correlations became : Reversed Stroke Creative ·295 ; ∞ ± ·260 ; Perseverameter, ·248 ; giving a final order of tests as follows :

Reversed Stroke (Alternating)	·320
Reversed Stroke (Creative)	·295
∞ ± (Curtailed)	·260
Alphabets	·254
Aitches	·252
Perseverameter (Curtailed)	·248
Perseverameter (Simple)	·236
∞ ±	·228
Colour Reversal	·082

Now, on examining this final order of tests from the point of view of the principles involved—" alternation " or " creative effort "—we find that the best test—reversed stroke alternating—involves both principles. It is essentially an alternation test in which one of the activities is of the creative effort type. Next follows a pure " creative effort " type test, namely Reversed Stroke Creative (if one accepts the Spearman Brown correction). After this they are all alternation tests, with one exception, and the poorest are those in which both the activities are entirely new. The exception just mentioned is the Colour Reversal Test. There is every reason to suppose that its low position is due entirely to the low reliability of the test (see the results with children on page 85) and not to its intrinsic nature ; for subjects experience difficulty in settling down to it and are impeded by difficulties of articulation. Scoring difficulties arise also, on account of the speed at which subjects proceed.

Though the tests shortened to one minute from two minutes are actually a little poorer than the uncurtailed forms, they are decidedly better than the latter when corrected for shortness by the Spearman Brown formula. Whilst this indicates that the principles enunciated above governing the curtailment are probably correct, it does not prove that in practice a larger number of shortened tests of this form would be superior to a smaller number of the longer tests, for the time taken up in explanations is generally longer than the testing time itself, so that eight one-minute tests might well take up more time than four two-minute tests. Taking these results into consideration along with all that experience suggests, one is forced to conclude that 1½ to 2 minutes is the best length for a perseveration test.

A happy result of this enquiry is the finding that the perseverameter, in spite of its crudeness of construction and a rather too difficult pattern of movement, gives quite good correlations with the other tests. Evidently a properly constructed machine of this type would give sound measures of perseveration and would avoid many of the drawbacks in written tests.

Before the above results were available a shorter battery of four tests designed on the principles stated above, was tried out with children of all ages (down to six years). Here the abcd test was shortened to abc; the alternation test was made an alternation of upward and downward triangles; and the "reverse stroke" test with numbers was made into a reverse stroke on the letter "w" since the number reversals were too difficult and would involve too much "g." The fourth test, colour reversals, was altered to the picking out of red and blue, since red and yellow brought special difficulties of speech articulation. All the tests were cut down to 1½ or 1¼ minutes, 1 minute or less being given to the X activity and ½ minute to Y, on the following patterns.

"Alternation"	(1) abc.....	15 secs.	X activity.
	(2) ABC	,, ,,	
	(3) abc.....	,, ,,	
	(4) ABC	,, ,,	
	(5) aAbBcC	,, ,,	Y activity.
	(6) aAbBcC.....	,, ,,	
"Creative"	(1) W's normally	15 secs.	
	(2) ,, ,, ...	,, ,,	
	(3) W's reversed	,, ,,	
	(4) W's normally	,, ,,	
	(5) W's reversed	,, ,,	

X activity (2) and (4).
Y activity (3) and (5).

A group of 53 10-year-old boys and girls were the first subjects (Individual testing). The intercorrelations were mostly negligible and two were negative. For the same battery given a second time they were still worse, more than half being negative. Either the same tests are not as satisfactory for children as for adults or else the length is too short for reliability—for such miserable correlations might even be found among intelligence tests if they were cut down to 1½ minutes. The score for the first and second administrations of each test were then added together and the new intercorrelations (i.e., giving as basis a 3-minute test) were slightly better, but still almost negligible, the mean correlations with fellow tests being w's ·09; colour naming ·06; △'s ·05 and abc —·07. Yet the reliability of these tests was w's ·60; colour-naming ·11; △'s ·38 and abc ·59. The reliability for the whole battery was ·56. It is possible that the colour test would be much better if its reliability could be increased by the devisal of a more accurate method of scoring.

The correlation of the tests (first and second together) with "g" were abc ·27, Δ's —·21, w's —·12, colour naming ·16. The correlation of the whole battery with "g" was slightly less on the second administration (—·09) than on the first (—·13). Evidently with this battery "g" correlations have been reduced until they are not of importance.

When the same battery was applied to 50 14-year-old girls the following intercorrelations resulted:

	W.s.	*Colour.*	*abc.*	*Δ's.*	*Mean.*
W's		·19	·21	·11	·17
Colour			·04	·08	·10
abc.....				·01	·09
Δ's.....					·07

With 50 14-year-old boys the order of goodness was the same (except that abc had risen two places) but the values were negligibly small.

These findings give precious little evidence of a general factor of perseveration in such tests for children. It seems altogether more difficult to measure perseveration among children. Possibly they have less of it. We may at least conclude that tests which are good with adults are not necessarily valid with children. Apart from this there are indications that with children the "creative effort" principle of construction is better than the "alternation" principle, whereas with adults the difference is not so marked and tests involving both principles have the highest validity of all.

IV.—Differences due to age, sex, and intelligence.

When the adult group above, which incidentally showed very little variation of intelligence, was divided into three groups according to intelligence level, the average "P" scores of these groups were practically identical and the little variation that existed bore no relation to the intelligence order.

The correlations with "G" of the "P" tests given to the 53 10-year-old boys and girls were as follows:

First Testing.

ABC, 0·12; Triangles, —·20; W's Test, —·14; Colour Reversal, —·01.

Second Testing.

ABC, 0·02; Triangles, —·28; W's Test, ·04; Colour Reversal, —·02.

The W's Test, the only one in which performance might be impeded by low intelligence, appears to be free from any serious negative correlation with " G." In the triangles test, on the other hand, there is for some reason a slight and possibly significant negative correlation with intelligence among children of a 10 years mental age.

On dividing the 53 children into three I.Q. Groups (below 90, 90-110, and above 110) the average " P " score on the first and second testing for the whole battery worked out as follows:

Average I.Q.	80	98·5	127·8
Average " P " Score—First Test	5·89	5·53	5·43
Average " P " Score—Second Test	5·48	5·46	5·39

From this it seems possible to conclude that though the repeating of a " P " Test may not raise its " P " saturation it does at any rate reduce its " G " correlation. The practice effect is most marked for children with a mental age of less than nine, and is practically negligible for the brighter children.

To investigate the effect of age, the same battery of " P " Tests was tried out with 200 14-year-old boys and girls. In this case no relation to " G " resulted when the figures were examined either by correlation or by division into " G " Groups, and we have since found in general practice that there is no need to introduce a correction for " G " into " P " scores attained on this particular battery with any children above the age of 10.

The general assumption, based on Pinard's early indication, seems to be that " P " score must increase with age. Our evidence is not conclusive since at the important adolescent period there is a gap. The adult group contained ages from 20 to 60 years and when divided into four sub-groups gave the following results:

Average Age.	*Number in Group.*	*Average " P " Score.*
21·2 years	9	45·9
26·5 ,, ...	14	50·5
32·6 ,, ...	18	50·0
44·1 ,, ...	11	50·6

From this one judges that there is at any rate no marked change after about 25, though two very old people tested by the present writer with the same test gave markedly higher scores.

Observations on the childhood period were made with the other battery described above, with the following results:

		Mean "P" Score.		*Mean "P" Score.*
10-year-olds	28 Boys	5·75	25 Girls	5·55
11 and 12-year-olds ..	9 ,,	5·75		
14-year-olds	112 ,,	5·70	93 Girls	5·13

Everything considered, it would seem that perseveration decreases slightly throughout childhood and rises again after adolescence to a stable adult level at which it remains until a rise takes place in extreme old age. The greater part of the change in childhood is due to diminution of "P" among those in the upper half of the "P" score range.

Sex differences in "P" score appear to be negligible among adults. Twenty-nine women had a mean score of 50·7 and 23 men a score of 48·1. Among the 200 14-year-old school children, on the other hand, there was a definite tendency for the boys to be higher perseverators. The boys and girls came from comparable schools—two elementary and one central school for each sex. The results are given for each of four I.Q. Groups. The boys were higher perseverators also at the 10-year level (see table above).

I.Q. Range of 14-year-old boys and girls	75-90	90-110	110-125	125 and upwards
Mean "P" Score (boys)	5·50	5·81	5·76	5·69
,, ,, ,, (girls)	5·29	5·16	5·09	4·94

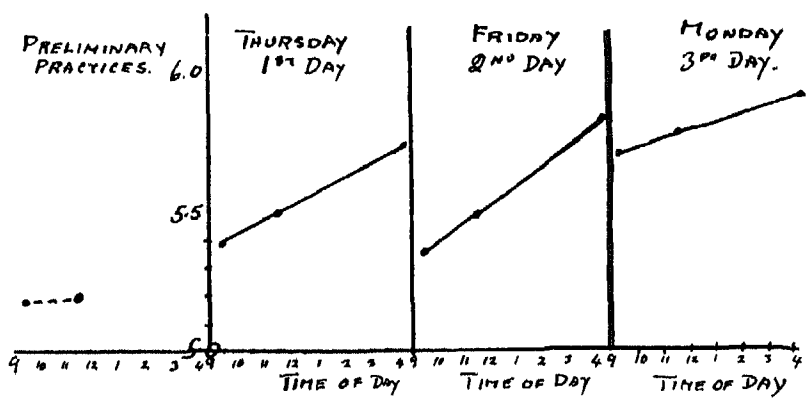
This is a mean sex difference of roughly 30 percentile ranks, but with the 10-year-olds the sex difference is only equivalent to about 10 percentile ranks.

V.—The effect of practice and fatigue.

In designing "P" Tests, one must take account of the need that arises in clinical practice to test the same individual again and again as a check on the success of treatment. On most tests the apparent "P"

score is bound, by the very nature of the test, to decline with practice. When the above four-test battery was given to the 50 10-year-old children a second time, their average " P " score fell from 5·61 to 5·11. This is a change of about 30 percentiles on the standardization table. It is obvious that this decrease through practice will be most marked in the B Type (creative effort) tests, for there the unusual " Y " activity quickly becomes a familiar and easy task. Thus the abc test mean score fell only from 1·56 to 1·55, whereas the W's Test fell from 1·22 to 1·15. Clearly for such repeated testing it will be necessary to resort to alternation tests exclusively or else to have an extensive supply of standardized (and varied) B Type (creative effort) tests available.

With the object of investigating still further the extent of practice effect, but also with the object of determining the effect of general fatigue upon perseveration measurements, the following experiment was planned. Three 14-year-old boys, widely varying in temperament, were given the standard four-test " P " battery three times a day, at 9-30 a.m., 11-30 a.m., and 4-10 p.m. This occurred on three successive days, after which two days holiday from school elapsed, followed by a fourth day of testing. The first day's results had to be neglected for they had accidentally been interrupted and were in any case intended only as an introduction to the test. Individual scores fell in a slightly irregular fashion, but the mean " P " scores for the three boys together fell steadily for two days, after which it rose a little, but not to the level of the first or second day. We wished to elucidate the manner in which " P " score varies from the beginning to the end of any one day, but to bring out this fact we had to make some allowance for the gradual cumulative effect of practice which lowered " P " score from the first day onwards.



On the first day the mean score of these three boys on the test battery was 5.39; on the last day it was 4·37. Assuming that the practice curve for Perseveration is the same as in most other activities, i.e., having the usual logarithmic form, we calculated that the increments of improvement in successive exercises would be as follows: ·33, ·20, ·12, ·10, ·08, ·07, ·06, ·06, thus accounting for the total improvement of 1·02. Using these figures, we corrected the score on each successive exercise to what it would have been had not practice effect intervened. Then the scores for each exercise on each of the three days on which the tests were satisfactorily given were plotted against time of day.

The remarkable fact then emerged, as seen in the above graph, that there is practically a straight line increase of perseveration with time each day. This increase is considerable. Percentile norms of perseveration for 14-year-olds (on this four-test battery) gave deciles at 4·6, 4·87, 5·0, 5·17, 5·33, 5·50, 5·68, 5·87, and 6·28. This daily fatigue effect (for such we may reasonably suppose it to be) would change the subjects position by 3 or 4 deciles. It is, therefore, of importance that "P" measurements should be made only at equivalent times of each day.

VI—Summary.

(1) With adults "P" can be tested satisfactorily by tests of a pure alternation type, working on quite new activities. This enables "P" to be measured by means of a machine—a Perseverameter.

(2) With adult subjects there is little to choose between alternation (A Type) and creative effort (B Type) tests as regards "P" saturation (the latter are slightly better), and the best tests involve both principles; but with children "creative effort" tests seem to be superior.

(3) By designing tests according to certain principles the (negative) correlation of "P" Tests with "G" can be eliminated, at least with subjects down to a 10-year mental level.

(4) The optimum length for an adult "P" Test is 1½ to 2 minutes, but longer measurements may be necessary to get good results with children.

(5) "P" score probably declines slightly with age until adolescence. It then rises to a stable adult level, at which it remains until there is a further rise in extreme old age.

Norms for "P" Tests for children must, therefore, be expressed as percentile (or other) distributions for each separate year of age.

(6) Repeating a " P " Test does not result in a better measurement (providing proper precautions against error have been taken on the first occasion). The correlation with " g " may fall slightly on repetition. The actual score falls with repetition of the test for about the first half-dozen repetitions and this fall is largely due to fall on the " creative effort " type tests. Norms are, therefore, inapplicable after a test has once been given and there arises a need for an extensive and varied supply of standardized " P " Tests for clinical work.

(7) No marked sex difference is apparent in adult " P " scores, but boys (between 10 and 14) are higher perseverators than girls.

(8) Perseveration score increases rapidly with fatigue, so that individual measurements are only to be compared if made at the same time of day, etc.

RÉSUMÉ

DE LA MESURE DE LA " PERSEVERATION."

On appliqua à 52 adultes une série de tests de " perseveration " diversement construits, et une série plus courte à 53 enfants, garçons et filles, de dix ans, 50 garçons de quatorze ans et 50 filles du même âge, dans le but général d'obtenir des améliorations dans la technique des tests " P." On trouva chez les adultes des entre-corrélations soutenant l'hypothèse d'un facteur général " P," mais chez les enfants les résultats étaient douteux.

On fit une distinction entre des tests d' " alternance " et d'autres d' " effort créateur." Dans les premiers on mesure la " perseveration " par le retard qui survient lorsque deux simples activités motrices alternent rapidement, dans les derniers par celui quand une activité familière est exécutée d'une façon absolument nouvelle. On trouva une saturation " P " plus grande avec le second type qu'avec le premier, mais les tests qui unissaient les deux principes étaient les meilleurs de tous.

En prenant certaines précautions on réussit à réduire à un chiffre négligeable la corrélation (négative) des résultats " P " avec les résultats " G," même chez les enfants.

On découvrit que le résultat " P " diminue légèrement pendant l'enfance, pour augmenter après l'adolescence, rester constant pendant la vie adulte et augmenter un peu dans l'extrême vieillesse.

La pratique diminue le résultat " P " dans tout test mais d'une façon plus importante dans les tests d' " effort créateur " que dans ceux d' " alternance." Une étude intensive de trois garçons démontra que la " perseveration " augmente avec la fatigue pendant la journée.

ZUSAMMENFASSUNG.

MESSUNG DER PERSEVERATION.

Eine Gruppe von neun verschiedentlich aufgestellten Perseverationstests wurden 52 Erwachsenen gegeben; eine kleinere Gruppe 53 zehn Jahre alten Knaben und Mädchen, 50 vierzehn Jahre alten Knaben und 50 Mädchen von vierzehn Jahren. Man beabsichtigte im allgemeinen Verbesserungen in Methoden der Perseverationstests zu erlangen. Bei den Erwachsenen entdeckte man bedeutungsvolle Interkorrelationen, die mit den Voraussetzungen eines allgemeinen P-Faktors übereinstimmten, bei den Kindern liessen die Resultate Zweifel.

Man unterschied zwischen Abwechslungstests und Tests schöpferischer Anstrengung. Bei jenen misst man Perseveration durch die hervorgebrachte Verzögerung wenn zwei einfache motorische Tätigkeiten rasch abwechseln; bei diesen durch die Verzögerung wenn eine alte Betätigung auf eine ganz neue Weise aufgeführt wird. Grössere Perseverationssättigung wurde bei der zweiten als bei der ersten Sorte vorgefunden, aber die Tests, die beide Prinzipien vereinigten, waren die besten.

Wenn man gewisse Vorsichtsmassregeln beobachtete, fand man, dass es möglich war, die (negative) Korrelation der Perseverationsergebnisse mit "g" auf eine nicht zu beachtende Zahl, auch bei Kindern herabzusetzen.

Es wurde entdeckt, dass das Perseverationsergebnis während der Kindheit etwas abmimmt; nach der Adoleszenz nimmt es zu, und während des ganzen Lebens des Erwachsenen bleibt es stetig; im hohen Alter steigt es etwas.

Ubung verringert das Perseverationsresultat bei irgend einem gegebenen Test, aber mehr bei Abwechslungstests als bei Tests schöpferischer Tätigkeit. Eine intensive Untersuchung dreier Knaben zeigte, dass Perseveration mit der Ermüdung im Laufe des Tages zunimmt.

THE TETRAD CRITERION AND SCHOLASTIC EXAMINATIONS.

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I.—*Introduction.*
II.—*Causes of correlation between school subjects.*
III.—*Reasons for anomalous results from tetrad analysis.*
IV.—*Weight of general and specific factors in school subjects.*
V.—*Summary.*

I.—Introduction.

In a recent paper J. H. Wilson[1] applies Spearman's technique of tetrad differences to an analysis of the correlations between various subjects in a School Certificate Examination, and he finds that certain groups of subjects give tetrad differences approximating to zero within the limits of sampling error. (Throughout this paper the term "subject" is used to mean a subject of a school curriculum, and not as indicating an individual.) Thus the activities in each group of subjects are held to be determined by one general factor[2] common to the members of the group and other factors specific to each subject; and, by way of corollary, none other independently varying general factor is present, nor any factor common to more than one and less than all of the subjects.

Such groups of subjects are:

(1) History, Geography, French, and Arithmetic;
(2) History, Geography, French, and Algebra;
(3) English, Algebra, Botany, and Art;
(4) English, Arithmetic, Chemistry, and Art;

and so on, twenty combinations of certain subjects being cited, which are found in each case to satisfy the tetrad criterion, and are used as reference subjects in the evaluation of a supposed unitary common factor.

This is a most surprising result, for it is usually held that scholastic performance is determined by many independent influences of extended scope, and on a priori grounds one would confidently expect the various correlations to yield significant tetrad differences.

[1] J. H. Wilson.—*Brit. Journ. Educ. Psych.*, 1933, *3*, 71 and 99.
[2] The term "*general* factor" is used in this article to denote any factor common to all the activities under review at the moment. It does not necessarily mean a *universal* factor common to all possible activities, and is of course distinguishable from a *group* factor, which is common to more than one but less than all activities.

II.—CAUSES OF CORRELATION BETWEEN SCHOOL SUBJECTS.

Among influences of varying weight which may be expected to cause correlation between the subjects of a School Certificate examination are the following:

(1) The general intellective factor, *g*, of Spearman.

(2) A memory factor, perhaps of wide range[1].

(3) Non-general intellective factors common to two or more subjects, usually termed "group factors," and more recently "specificalities"[2] ("unspecificalities" is surely more appropriate !).

(4) Qualities of disposition and temperament, whose influence may be at least as great as that of Spearman's *g*[3]. These qualities as identified by popular definition, being only partially correlated with one another, would undoubtedly resolve themselves on ultimate analysis into several independently varying elements. Such elements, in so far as they affect school work in general, would thus constitute a number of independent general factors throughout the subjects correlated.

(5) The home environment of the pupils, opportunities for home study, encouragement from parents, bodily nourishment, psycho-neuroses, and the like.

(6) Different standards or methods of teaching in different schools, varying efficiency of school staffs, the quality of discipline maintained, and, not least, individual differences in headmasters[4].

(7) Other sources of heterogeneity, such as age, sex, special coaching, etc.[5]

(8) Some of the inherent vagaries of examinations recently investigated by Valentine[6], such as speed of working, sangfroid or nervousness during the examination, health of candidates, and the influence of caligraphy and English composition on the examiner.

[1] C. SPEARMAN: *Abilities of Man*, 1932, p. 286 ff; T. L. KELLEY: *Crossroads in the Mind of Man*, 1928, p. 108.

[2] W. BROWN and W. STEPHENSON.—*Brit. J. Psych.*, 1933, *23*, 353. The writer recently asked two psychologists of repute, who had not previously heard the term, what they understood by "specificality" in the statement that two tests showed specificality. Each replied without hesitation, "*Independence* of each other." In a later paper (*Brit. J. Psych.*, 1934, *25*, 211) Stephenson uses the term more reasonably though inconsistently to indicate the specific factor peculiar to a test.

[3] C. SPEARMAN, *ibid.*, p. 354; *also* D. W. OATES.—*Brit. J. Psych.*, 1928, *19*, 1, and *The Forum of Education*, 1929, *7*, 171.

[4] Cf. C. SPEARMAN, *ibid.*, pp. 156 and 157.

[5] C. SPEARMAN, *ibid.*, pp. 155 and 206.

[6] C. W. VALENTINE in collaboration with W. G. EMMETT: *The Reliability of Examinations*, London, 1932, pp. 18 and 162.

(9) Different standards of marking in different subjects. As Spearman writes: "The fundamental theorem, whereby variables of the form $g + s$ with no group factors make the tetrad differences zero, ceases to apply when the g is scaled in different ways. Hence we can infer that a mere change of scale suffices to generate group factors "[1].

Since most of these influences, largely independent of one another, spread themselves throughout the subjects of the examination, we must enquire why they are not brought to light in the statistical analysis under review.

III.—POSSIBLE REASONS FOR ANOMALOUS RESULTS.

(1) *Accuracy of Computation.*

The present writer has checked many of the computations in Part I of Wilson's paper, and though in some cases the results differed from those published, the differences were not such as to suggest that analysis into one general factor and specific factors by the customary procedure would not apply at any rate to many of the groups of subjects.[2]

(2) *The Influence of Attenuation on the Tetrads.*

Although the tetrad criterion is independent of the effects of attenuation when the tetrad difference is zero, it is not otherwise so, unless, according to the customary criterion, the ratio of the t.d. to its probable error remains the same after application of the correction.[3] Garrett and Anastasi[4] have stated that the probable error in fact does not increase in proportion to the increase in the corrected tetrad itself, and accordingly the influence of attenuation in the present case must be examined.

The reliability of the School Certificate examination in the various subjects is difficult to estimate exactly, but comparison with performance of the pupils in their school examinations enables a good guess to be made.

[1] C. SPEARMAN.—*Journ. Educ. Psych.*, 1930, *21*, 569.

[2] For purposes of record the main differences found are given here. On page 76 of Wilson's paper, the p.e. of the tetrad distribution given as ·0266 should be ·0179, while on page 77 the p.e.'s of the three t.d.'s obtained from History, Geography, French, and Algebra given as ·0131, ·0281, and ·0180 should be ·0232, ·0173, and ·0128 respectively. Mr. Wilson has kindly confirmed by letter these recalculations. In the latter case the substitution of the revised p.e.'s makes almost certain the existence of overlap between two or more of the subjects mentioned.

[3] SPEARMAN in dealing with this point (*Abilities of Man*, App., p. vi) somewhat unfortunately heads his paragraph " Freedom of criterion from influence of attenuation," though it is clear that only the special case of zero t.d.'s is under consideration.

[4] H. E. GARRETT and A. ANASTASI: *The Tetrad Difference Criterion*, Ann. New York Acad. Sci., 1932, *33*, 254 ff.

Valentine found an average correlation of 0·80 between the School Certificate examination as a whole and the pooled results of a school examination in the same subjects; this figure is based on 376 pupils in eight different schools.[1] A somewhat smaller correlation might be expected when two similar examinations in one subject only are compared, since the influence of chance disturbing factors would probably be greater. A rough estimate of the reliability of examinations in individual subjects might therefore be placed at 0·7.

Again comparing School Certificate results with school performance, Crofts and Caradog Jones[2] give for French, Latin, and Mathematics reliability coefficients of "about 0·75," and for English, History, and Geography "about 0·65" for "a large number of candidates."

Applying the data of the latter authors to the four subjects, (1) History, (2) Geography, (3) French, and (4) Arithmetic, we get from Wilson's correlations the tetrad differences given in the following table:

	Corrected for Attenuation.		*Not Corrected (Wilson).*	
	Tetrad Difference.	*Ratio* $\frac{t.d.}{p.e.}$	*Tetrad Difference.*	*Ratio* $\frac{t.d.}{p.e.}$
t_{1234}	·057± ·038	1·50	·028± ·020	1·33
t_{1243}	·142± ·034	4·18	·069± ·018	3·84
t_{1342}	·086± ·028	3·07	·042± ·014	3·00

(*a*) $t_{1234}=r_{12}\cdot r_{34}-r_{13}\cdot r_{24}$ (Kelley's notation); similarly for t_{1243} and t_{1342}.
(*b*) The correlation coefficients were corrected for attenuation by the formula:

$$r_{ab}\,(\text{corr.}) = \frac{r_{ab}\,(\text{raw})}{\sqrt{(r_{aa'}.r_{bb'})}},$$

where $r_{aa'}$ and $r_{bb'}$ are the reliability coefficients of subjects a and b.

(*c*) The probable errors of the corrected tedrads were calculated from Garrett's formula (*loc. cit.*, p. 279), and those of the uncorrected tetrads from Kelley's formula (*Crossroads in the Mind of Man*, 1928, p. 49). Spearman's long formula (*Abilities of Man*, 1932, App. p.x., after correction of a misprint, or Wilson, (*Brit. Journ. Educ. Psych*, 1933, *3*, 76) gave practically the same figures as Kelley's.

The influence of attenuation here is much less than that in the case examined by Garrett and Anastasi, and neglect to apply the correction cannot account for the apparent absence of proof of overlap. As the effect was smaller than anticipated, the labour of calculating the probable errors of other corrected tetrads by Garrett's tedious formula did not seem warranted.

[1] C. W. Valentine: *The Reliability of Examinations*, 1932, pp. 61 and 87.
[2] J. M. Crofts and D. Caradog Jones: *Secondary School Examination Statistics*, 1928, p. 47.

We come now to some statistical considerations, which seem to the writer to afford a sufficient explanation of the present discrepancy, and also to cast doubt on the supposed absence of group or additional general factors deduced from many other tetrad investigations.

(3) *Some Statistical Considerations.*

It is usually assumed that because the ratio of a tetrad difference to its probable error, or its significance ratio as it is often called, is small, the true tetrad difference is zero, and the activities conform to the two-factor hypothesis. This conclusion, however, is not necessarily correct.

In the first place, low correlations will in themselves tend to give small t.d's, without corresponding small p.e.'s unless the data are derived from very large samples of population. In the present case many of the correlations concerned are small (Wilson, *loc. cit.* Table X, p. 83, and Table XVII, p. 99), some less than twice their probable error, others only slightly greater, and no reliable conclusion from such data seems to be possible.

Next, even if correlations are fairly high, tetrad analyais may not be sensitive enough to show the presence of the anticipated general factors except under extremely rigorous experimental conditions, for the tetrad equation will tend to be less disturbed by additional *general* factors than by group factors common to only two of the subjects. A preliminary investigation of this point by means of synthetic correlations does indeed suggest that under certain circumstances samples of population far exceeding a few hundreds would be required before a significance ratio of five (Spearman's standard) would be reached and the presence of other general factors demonstrated.

Finally, and probably most important of all, the assumption that a tetrad difference is zero when it is just less than five times its probable error is fundamentally unsound. This assumption is made by many workers with the tetrad criterion ; we quote Wilson by way of illustration (*ibid.*, p. 77) : " As none of the t.d.'s is ever greater than five times its p.e., the conclusion is reached that one underlying common factor is sufficient to account for correlation among all these subjects, i.e., History, Geography, French, and Arithmetic . . . the correlation is exclusively due to a single factor."

Actually the evidence only justifies the conclusion that the odds are less than 2,684 to 1 *in favour of* a positive value of t.d. as against a negative (or *vice versa*) from the results of a further sampling. (The same remarks apply though with less force when a criterion of 4 × p.e. is taken - in this case the odds are less than 286 to 1 in favour of a positive value.)

Workers in this field are too apt to forget that the probable error carries a positive as well as a negative sign. If a t.d. of ·0694 ± ·0177 (Wilson, *ibid.*, p. 76) is regarded as evidence of a true t.d. of zero, i.e. of ·0694 − 3.92 × p.e., it is at the same time equally valid evidence of a true t.d. of ·1388, or ·0694 + 3·92 × p.e. And similarly in the general case a tetrad difference, t, is as cogent proof of a true t.d. of 2t as it is of a true t.d. of zero.

If we accept the presence of more than one general factor, or of a group factor, in school examinations, and there seem to be ample grounds for doing so, we must allow that "specific correlations" and t.d.'s which are less than five or even three times their probable errors are not necessarily indicative of a true value of zero, and we are entitled to conclude that the tetrad criterion is not a sufficiently sensitive instrument to detect such additional factors when the sample of population does not exceed a few hundreds (Wilson's samples comprised 371, 110, and 77 pupils respectively in his three series of investigations).

In the present case there is little reason to doubt that the non-specific factors which have escaped detection have at least as important an influence as g[1]; and it surely follows that one should accept with reserve the results of other workers, who, using no greater samples of population than Wilson and applying the tetrad criterion according to the methods now criticized, find but one general factor running through their tests.

A further discussion of this matter and its implications is out of place here, but the writer hopes to deal with it more fully in a later paper.

IV.—The Weights of General and Specific Factors in School Subjects.

One result of the foregoing considerations is that the accurate evaluation of the weight of a central intellective factor, g, in the school subjects from the data provided is not possible, since the appropriate formula ceases to be applicable when the reference subjects have overlap. Further, supposing the use of the formula to be valid, any figure thus obtained would give an indication of the weight of all the general factors present, from which several independent general factors (of unknown weight) would have to be partialled out before any measure of g could be obtained.

On these grounds the figures recorded by Wilson for the amount of g in the various subjects may be regarded as too high, and the specific

[1] See in particular, D. W. Oates: *The Forum of Education*, 1929, 7, 171.

factors correspondingly too low. On the other hand, the correction of the data for attenuation, an important influence apparently disregarded by Wilson, would act in the opposite direction.

Hence, considering only the cognitive aspect of a subject, we see that correction for errors of attenuation decreases the calculated weight of its specific factors, while correction for the presence of non-cognitive general factors increases their weight. On the whole it looks as though the importance attached by Wilson to specific abilities in the examination might be correct,[1] but it cannot be said that much weight of evidence in support has been brought forward.

Lastly, it may be noted that since the calculation of "specific correlations" is dependent on a reasonably accurate determination of the saturation of the subjects with *g*, the tables of specific correlations given by Wilson are of questionable value.

V.—SUMMARY.

(1) The correlation between different subjects of scholastic examinations is probably due to several independent general and group influences, and in consequence it is to be expected that the intercorrelations of such subjects should not comply with the tetrad criterion of divisibility into one general factor and specific factors without remainder.

(2) A series of inter-correlations between certain subjects of a School Certificate examination were found by J. H. Wilson apparently to comply with the tetrad criterion, and the present enquiry concerns itself with the reasons for the discrepancy.

(3) (*a*) The influence of attenuation on the significance ratio of the tetrad differences was found to be but small. (*b*) The procedure usually followed in tetrad analysis is open to criticism. A tetrad difference with a small significance ratio is not necessarily to be taken as evidence of non-departure from zero, for if the original correlations are small and unreliable an increase in the size of the sample of population will usually increase the significance ratio. Further, the tetrad criterion is in general a less sensitive indicator of independent general factors than of group factors. Finally, it is unsound to conclude that a tetrad difference is zero when it is less than five or even three times its probable error.

[1] J. H. WILSON.—*Brit. Journ. Educ. Psych.*, 1933, *3*, 106.

RÉSUMÉ.

LE CRITÊRE "TETRAD" ET LES EXAMENS SCOLAIRES.

La corrélation entre différentes branches des examens scolaires est due probablement à plusieurs facteurs généraux indépendants et d'autres facteurs groupés, et par conséquent on doit s'attendre à ce que les intercorrélations de telles branches ne satisfassent point le critère " tetrad " de la divisibilité en un facteur général et des facteurs spécifiques sans reste.

J. H. Wilson a découvert qu'une série d'intercorrélations entre certaines branches d'un examen du " School Certificate " semblaient satisfaire le critère " tetrad," et l'enquête actuelle s'occupe des raisons de cette contradiction.

On trouva que l'influence de l'atténuation sur la proportion signifiante des différences " tetrad " était minime.

Le procédé que l'on suit ordinairement dans l'analyse "tetrad" s'expose à la critique. Une différence " tetrad " ayant une proportion signifiante basse ne doit pas être considérée comme le témoignage du non-départ du zéro, car si les premières corrélations sont basses et peu valables, l'augmentation dans la quantité de l'échantillon de population augmentera généralement la proportion signifiante. En plus le critère "tetrad " est en général un indicateur moins sensible des facteurs généraux indépendants que des facteurs groupés. Enfin, il est faux de conclure qu'une différence " tetrad " soit zéro lorsqu'elle est moins de cinq et même trois fois l'erreur probable.

ZUSAMMENFASSUNG.

DAS TETRADKRITERIUM UND SCHULPRÜFUNGEN.

Die Korrelation zwischen verschiedenen Gegenständen von Schulprüfungen hängt wohl von mehreren unabhängigen allgemeinen und Gruppeneinflüssen ab und infolgedessen darf man erwarten, dass die Interkorrelation solcher Lehrfächer dem Tetradkriterium der Teilbarkeit in einen allgemeinen Faktor und spezifische Faktoren nicht ohne Rest entspricht.

J. H. Wilson fand, dass eine Reihe von Interkorrelationen zwischen gewissen Fächern in einer englischen School Certificate (Zeugnis)—Prüfung dem Tetradkriterium scheinbar entsprachen, und die vorliegende Untersuchung beschäftigt sich mit den Gründen für diesen Widerspruch.

Der Einfluss der Verminderung auf das Bedeutungsverhältnis der Tetraddifferenzen ergab sich als recht klein.

Das gewöhnlich befolgte Verfahren betreffs Tetradanalyse kann kritisiert werden. Eine Tetraddifferenz mit einem geringen Bedeutungsverhältnis darf nicht ohne weiteres als Beweis für Abweichung von Null genommen werden, denn wenn die ursprünglichen Korrelationen gering und unzuverlässig sind, so wird eine Vermehrung der Zahl der Vp. das Bedeutungsverhältnis in der Regel vergrössern. Ferner, das Tetradkriterium ist im allgemeinen ein weniger empfindlicher Indikator von unabhängigen allgemeinen als von Gruppenfaktoren. Und schliesslich ist es nicht zuverlässig, wenn man den Schluss zieht, dass eine Tetraddifferenz Null ist, wenn sie weniger als fünf-und sogar dreimal so gross ist wie ihr wahrscheinlicher Fehler.

THE TETRAD CRITERION AND SCHOLASTIC EXAMINATIONS.

By J. H. WILSON.

I.—*The analysis.*
II.—*Goodness of fit.*
III.—*General remarks on the results.*
IV.—*Relative magnitude of the roots.*
V.—*Concluding remarks.*

It has been a great privilege to be shown Mr. Emmett's interesting paper in advance of its publication. We have thus been able to dispel certain misunderstandings by correspondence.

We agree that scholastic ability (so called) is not a single unitary function, but a complex of traits. My paper dealt with this ability as measured by a particular School Certificate Examination and showed that it could not be analysed into a single ability, but only into a number of components.

Mr. Emmett raises the important question as to why such an analysis failed to bring to light other influences of extended scope, which data from other sources demonstrate do affect scholastic ability, and examines three possible reasons for the result. The first two of these, he concludes, cannot account for it. The third attributes the results to a defect in the normal use of the technique of tetrad differences and their probable errors.

Before accepting such an explanation it might be well to see if a technique other than that of the tetrad difference gave a similar result. In consequence, I have made an analysis which with the assumption of linearity, begins with a component "e_1" the contributions of which to the variances of the measured variables have as great a total as possible next takes a component "e_2" independent of "e_1" the contributions of which to the residual variance is as great as possible; and so proceeds to determine the components, not exceeding "n" in number.

I.—The analysis.

The investigation is made on the Table herewith. The first question relates to the use of the "raw" correlation coefficients. It is impossible to obtain the reliability coefficients. In consequence, I present the results for two cases: one, in which the reliability coefficient is assumed to be unity, another, in which it is taken as ·70.

Table A gives the factor pattern in both instances. Each column corresponds to a principal component, and each of the seven rows to a subject, these being numbered as in my original paper. The entries in

these rows are the coefficients of the " e's " in the expression for the " m's " ; they are, at the same time, the correlations of the " e's " with the " m's." The table also includes the roots and the percentage of the variance in each case.

Table B gives the values of the correlation coefficients as calculated from the " factor patterns." The figures in the upper half of the table are those for the case in which the reliability coefficient is ·70 and those in the lower half for that in which it is 1·00.

TABLE A.

FACTOR PATTERNS.

	Reliability Coeff. = 1·00.					*Reliability Coeff.* = ·70.				
Factor	e_1	e_2	e_3	e_4	*Total.*	e_1	e_2	e_3	e_4	*Total.*
1	+ ·716	+ ·534	+ ·138	− ·094		+ ·687	+ ·456	+ ·028	− ·123	
2	+ ·714	+ ·510	− ·152	− ·270		+ ·684	+ ·414	− ·189	− ·116	
3	+ ·751	+ ·194	− ·306	+ ·504		+ ·721	+ ·144	− ·267	+ ·265	
4	+ ·658	+ ·066	+ ·718	+ ·140		+ ·632	+ ·211	+ ·496	+ ·107	
5	+ ·778	− ·482	− ·058	+ ·067		+ ·746	− ·414	+ ·028	+ ·002	
6	+ ·738	− ·422	− ·087	− ·294		+ ·708	− ·367	+ ·007	− ·182	
7	+ ·762	− ·409	− ·148	+ ·045		+ ·731	− ·360	− ·050	− ·015	
Root	3·748	1·164	·685	·482	6·049	3·447	·882	·357	·144	4·830
%	62	19	11	8	100	71	18	7	3	100

TABLE B.

CALCULATED COEFFICIENTS OF CORRELATION.

	1	2	3	4	5	6	7
1. Engl.		·668	·520	·531	·448	·341	·339
2. Hist.	·787		·573	·413	·334	·352	·363
3. Geog.	·553	·546		·382	·460	·407	·484
4. French	·592	·357	·358		·418	·375	·359
5. Alg.	·286	·300	·542	·447		·680	·693
6. Arith.	·319	·404	·351	·355	·762		·653
7. Geom.	·302	·346	·561	·374	·802	·735	

II.—GOODNESS OF FIT.

The data for the goodness of fit are as follows:

Case 1.—Reliability, 1·00

Mean Difference between Calculated and Actual Coefficients ..... =+·00179
Standard Deviation of these Differences ..... = ·0155
Greatest Difference in Paired Coefficients ..... =+·143
(p.e. of Coefficient=·023)

$2\sum r+n=26\cdot184$

$[\Sigma k_{x1}]^2+[\Sigma k_{x2}]^2+\ldots\ldots+[\Sigma k_{xp}]^2=26\cdot201$

Difference=·017

Case 2.—Reliability, ·70

Mean Difference between Calculated and Actual Coefficients ..... =+·00047
Standard Deviation of these Differences ..... = ·0081
Greatest Difference in Paired Coefficients ..... =−·122
(p.e. of Coefficient=·031)

$2\sum r+n=26\cdot184$

$[\Sigma k_{x1}]^2+[\Sigma k_{x2}]^2+\ldots\ldots+[\Sigma k_{xp}]^2=24\cdot240$

Difference=1·944

III.—GENERAL REMARKS ON THE RESULTS.

In neither case is the goodness of fit better than that obtained in the original investigation.

In both there is a common factor which seems to measure general capacity.

The correlations of this common factor with the measured variables are in both cases (generally speaking) higher than those previously obtained. In one, it accounts for 62 per cent of the total variance, in the other, for 71 per cent.

IV.—RELATIVE MAGNITUDE OF THE ROOTS.

A close approximation for differentiating between the roots is obtained by calculating the ratio

$$\frac{\text{Differences of the Roots.}}{\text{Sum of the Roots.}}$$

The standard deviation of this expression is $\frac{1}{\sqrt{N-1}}$ where N=371, the number of pupils, giving ·052.

Case 1.—Reliability, 1·00

(*a*) First root and second root
Ratio ·526

(*b*) Second root and third root
Ratio ·259

(*c*) Third root and fourth root
Ratio ·205

Case 2.—Reliability, ·70

(*a*) First and second root
Ratio ·593

(*b*) Second and third root
Ratio ·424

(*c*) Third and fourth root
Ratio ·425

In both instances the ratio for the first two roots is greater than ten times the standard deviation and the two roots may reasonably be considered significantly different.

V.—Concluding remarks

The analysis shows that a single component accounts for at least 62 per cent of the variance of the seven tests. It is also significantly different from each of the other components. These facts support the view that one factor enters into all the tests and does so to a dominating extent.

In interpreting this factor nothing need be added to the remarks made in my original paper.

The remaining factors account for rapidly diminishing amounts of the total variance

As to the first of these it has marked positive correlation with English and History and marked negative correlation with all the mathematical subjects. It has positive correlation with the remaining two subjects. It would appear to measure a difference between the mathematical and the other subjects. This difference might be attributable to the fact that the former make large use of symbolization, the latter of linguistic expression. Prolonged attention to the former might affect adversely skill in the latter.

The second and third add but little to the total variance. Their degrees of correlation with the measured variables are, in general, small. In consequence, their interpretation is difficult. Possibly the second is a factor specific to French, and the third specific to Geography.

It is interesting to note that the mathematical subjects here behave in an unitary fashion throughout, just as they were found to do in the original investigation.

The outcome of this analysis being very similar to that previously obtained I feel unable to accept Mr. Emmett's explanation. It must be kept in mind that the problem before us is the presumed influence of a number of traits—mental and physical—on the results of a particular School Certificate Examination, and not on scholastic ability or school-work in general. The distinction is important. Take the case of sex.

In each of my investigations the pupils were of one sex. Its influence is ruled out. Take that of age. The children were certainly not of the same precise age, but their ages fell between very narrow limits. Again, take that of coaching. In the special case under consideration, the pupils are supposed to take the examination without special coaching and the influence of any special preparation is minimized by the employment of external examiners. It is, of course, impossible to deal piecemeal with all the influences listed by Mr. Emmett in a brief reply. Many may be explained as above.

In the case of others another consideration must not be overlooked. There is no single criterion of scholastic ability. Among some of the investigations quoted by Mr. Emmett the criterion employed was the results of a school terminal examination, while in others school teachers' estimates were used. Unless, therefore, the degree of correlation between these criteria and the School Certificate Examination under review is perfect or at least very nearly perfect, the results of investigations which use either of the former criteria cannot be accepted as throwing light on investigations using the latter : they can at most be recognized, and that with reserve, as indicating a more or less probable tendency. Quoting from the work of Valentine, Mr. Emmett gives a figure no higher than ·80. Applying this consideration in but one case—in order to economize space—that of the influence of disposition and temperament may be taken. Dr. Oates showed that the correlation between Intelligence and Temperament traits is low (when the partial coefficient is calculated it disappears), that between Intelligence and scholastic ability is small (partial coefficient ·254) and that between Temperament traits and scholastic ability is higher (·56). The criterion of scholastic ability was that of a school terminal examination. These results must not, therefore, be applied directly to my investigation. It is possible that in a terminal examination the pupils are able to use traits other than those they would use in a School Certificate Examination. It is possible that in the former they are able to use reproduction to a much greater extent than in the latter. In the School Certificate Examination they might have to call upon innate capacity to a far greater extent. Were such the case the figures of Oates and myself would be explained.

No doubt enough has been said to indicate that an alternative explanation is possible.

CRITICAL NOTICE.

A SECONDARY SCHOOL ENTRANCE TEST. (W. A. Brockington. Oxford University Press, 1934, pp. 1-64. 2s. 6d.)

THIS little book, which the Director of Education for Leicester describes as a "note," is a description of the very interesting method used in a county area for the selection of candidates for secondary education. In certain aspects it needs critical examination, and it seems necessary to summarize the method first.

In the area there are some 5,000 children in each age group and some 21 grammar schools. The following are the stages in the selection of pupils:

(1) Children of 11+, with the exclusion of those conspicuously below the standard, some 20 per cent, are presented for the examination, together with some 20 per cent of the 10+ population.

(2) The Written Examination consists of:

(*a*) English, maximum mark 210; (call the mark scored E): (1) comprehension, 30 minutes, max. 50; (2) grammar, 30 minutes, max. 70; (3) descriptive essay, 10 minutes, max. 20; (4) more imaginative essay, 25 minutes, max. 40; (5) spelling test, 15 words dictated in context, max. 15; a further 15 marks are allowed for spelling in the comprehension test.

(*b*) Arithmetic, maximum mark 100; (call the mark scored Ar.): (1) mental, 14 questions, 10 minutes, max. 28; (2) drill, 10 questions, 10 minutes, max. 20; (3) problems, 5 questions, 40 minutes, max. 52.

(*c*) Group Test, maximum mark 130; (call the mark scored G) consisting of short answer questions of psychological type, plus attainments questions in elementary history, geography, literature, and Nature study.

(3) The scripts are marked by teachers, standardized, and age allowances granted.

(4) Scrutiny of results by one of nine interviewing area boards, and comparison with school records and history as presented by elementary teacher (it is not clear how the private school candidates, if any, are dealt with).

(5) All candidates are interviewed in small groups by one or more members of an *ad hoc* board. The interview (call the rating here I) consists of: (*a*) preliminary personal questions; (*b*) standardized number test, 10 short questions (it is not clear whether these are presented and

answered orally or otherwise); (*c*) standardized English test, 24 short questions (to which the same doubt applies).

(6) Candidates are put in three lists called A1, A2, and A3, on the following general lines:

(*a*) List A1, for which either (E+Ar.) is not less than 250, or (E+Ar.) is from 235 to 249, and the candidate is exceptional in I and G is not less than 80;

(*b*) List A2, for which (E+Ar.) is from 235 to 249, or (E+Ar.) is less than 235 for candidates exceptional in I;

(*c*) List A3, for which (E+Ar.) is from 185 to 234, and the candidate is satisfactory in G and in I.

These three lists account for 20 per cent of the candidates (see page 2, though table on page 23 indicates more than 30 per cent).

(7) There are three B lists similarly for the next 20 per cent.

(8) Candidates in List A1 receive free places, and many of A2 receive special places.

(9) In effect, the Group Tests—Interview—School Record—etc., system is claimed to discover ability otherwise unrevealed. It is only used for upgrading candidates. The Chief Examiner has the final decision.

The following appear to be valid criticisms of the method or of the book referred to:

(1) Maximum Marks in Arithmetic and English. English has been more heavily weighted " to improve its ability as a differentiating factor." The maxima, of course, are not relevant to the relative weights of any two subjects, nor, as the writer seems to suggest, is the mode. But an interquartile range of 63 for English and of 33 for Arithmetic, as indicated by the date of page 13, certainly indicates the need referred to (page 14) of " enhancing the value of Arithmetic as a selective factor."

(2) Age Allowance. This is at the rate of $1\frac{1}{2}$ per mensem per cent of marks gained for 11+ and of $16\frac{1}{2}$ per cent of marks gained for 10+. There are three separate points here:

(*a*) There is no justification for any age allowance as a percentage of marks gained. See, e.g., Thomson, this *Journal*, Vol. II, 1932, page 133, or Sandon, *Forum of Education*, Vol. VI, 1928, pp. 276 to 280.

(*b*) An age allowance of $1\frac{1}{2}$ per cent. p.m. is probably insufficient. The data given (page 30) are not suitable for criticizing this, for the examination ages are computed to 31 July[1] and the illustrative data are by

[1] In this connection, may a protest be made about the recent decision of the Board of Education that a pupil born on, say 1 August, 1923, is 12:0 on 31 July, 1935? This Roman system of computation only elsewhere survives for calculating duration of railway excursions and of prison sentences, and is unjustifiable for scientific statistics.

quarters of the year, which straddle this date. In addition, the age distribution of the underage candidates (10+) is not given. The percentage of successful candidates for each quarter of the year in 1929 is anyway fallacious, for these children were born in 1917, '8, or '9, when the births were most erratically spread over the year, as the following table shows (births being for England and Wales, in tens of thousands).

Year	1917				1918				1919			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4
Births	17·9	17·3	16·3	15·4	16·2	17·0	16·8	16·2	14·5	14·9	17·5	22·4

(c) Both the attempts (1) to use the same age allowance for the uncreamed 10+ as for the creamed 11+ and (2) to grant a flat rate (16½ per cent) to all 10+ (and thus, as the 10:11 usually score a higher average than the 10:0, an actual bonus to the older) are unfair.

(3) Non-pooling of marks. "The high degree of mental intelligence shown by a candidate who writes a real alpha plus essay of outstanding merit should be conclusive in compensating for weakness elsewhere." How much weakness? If unlimited, Spearman would say that it is a case of small g and a high specific factor—and the secondary schools can not deal with a pupil of small g. If limited (what is the limit?) the resultant effect would be practically that of adding the various marks suitably weighted. We may still agree (page 24) that the high mark is the more indicative. But this will hold all through, and its corollary seems to be that the School Certificate—much-criticized principle of the number of credits rather than the total mark is the sounder criterion.

(4) The method of the L.E.A. may be effective when only one borderline is concerned, e.g., admission to a grammar school or not, but in many areas there are many borderlines. This arises, e.g., in the case where there are many grammar schools that are geographically contiguous, and candidates have the choice of school. An order of merit is apparently essential here all along the line, and the examination ought to attempt to grade all the candidates. A class list system, with non-pooling of marks, will not do this.

(5) The book concludes with two chapters on the School Certificate Examination. The wastage figures, and the effect of an agreement by the parent to keep at the secondary school the pupil till the end of the *term* in which he attains the age of 16, are very suggestive. But with regard to the successes of free place pupils, we cannot follow the author

in his two statements: (*a*) "No coefficient of correlation between the two examinations could be obtained to measure the validity of the test in selecting pupils most likely to succeed in the examination"; (*b*) "The three classes into which List A is divided have some reliability."

Actually the author's figures give the following enneachoric table:

Admission List.		A1	A2	A3	*Total.*
School Certificate Results.	Honours	130	15	8	153
	Passed (without Honours)	454	62	23	539
	Fail	135	39	18	192
	Total	719	116	49	884

From this, by tetrachorics, we find a value of r of order ·2. In other words, we *can* compute a coefficient of correlation, and one which indicates that the entrance classes have little reliability. This is on selected material (25 per cent, say, of all candidates), and in the absence of particulars cannot, as has recently been pointed out, using Karl Pearson's principles in relation to statistics of selected material, be compared with what might be expected from unselected pupils, nor with Valentine's results (*Reliability of Examinations*, Chapters IV and V), but it seems disappointingly small. There is, however, no doubt that the Leicestershire experiment is a very valuable one, and points to one of the ways in which, by using primary schools' records, by interviews, and by modern tests, we may improve selection. The conclusion appears to be that the experiment has not been drastic enough, as the author hints in several places; the main guide to the award of a secondary school place should be the elementary school record. We must, however, in using this, always remember that teachers never can allow appropriately for age differences by a bare record and without elaborate analysis, the principles of which have not yet, in my opinion, ever been clearly and fully set out. The function of the written external examinations is to standardize school with school.

FRANK SANDON.

BOOK REVIEWS

Thought and Language: By P. B. BALLARD, M.A., D.Litt. (Published by University of London Press, Ltd. pp. 304. 6s. net.)

Dr. Ballard in this book treats four main topics: the psychological analysis of thought and its relation to words, the problem of grammar, literary style, and modern trends in English literature.

In the first five chapters readers are introduced to the results of recent psychological investigations into the nature of meaning and thinking, and into the development of language in the growing child. They reveal a clear understanding of the fundamental problems and show how a knowledge of the mental processes involved can aid education in guiding the development of language in children.

The next five chapters are mainly concerned with grammatical and linguistic problems. The two main schools of grammar are examined critically. Dr. Ballard shows how authoritative grammar arose in connection with English, some of its pitfalls, and the increased difficulties which its use introduces to students of English. He supports wholeheartedly the scheme of grammar expounded by Professor Otto Jespersen and shows how its adoption will ease the work of both teachers and pupils in understanding the uses of words in English language.

The chapters on style are stimulating, revealing an independence of judgment and an appreciation of teachers' problems in fostering a sound appreciation of English poetry.

The last chapter is devoted to an examination of the Modernists, concluding with an adverse criticism written in imitation of the extremists. Surely in a book of this kind the Modernists are not worth a whole chapter, and is Dr. Ballard justified in calling their conglomerations of letters a new tongue?

It is scarcely necessary to say that the book is well written and that those who are already familiar with Dr. Ballard's "Teaching the Mother Tongue" will welcome this volume. It should encourage those who are working on lines similar to those advocated so ably by the author, and lead others to review their own methods in the light of the evidence and criticisms brought forward by him. A.E.C.

Logic in Practice: By L. SUSAN STEBBING. (Methuen and Co., Ltd.) pp. 108. 2s. 6d.

The aim of this book is to help the ordinary man and woman to attend to the logical principles of sound reasoning and to apply them to test the soundness of particular arguments. The author's treatment of the subject testifies to her excellence as a teacher; she approaches the subject in a convincing way so that the reader is helped to recognize the use of the subject before he is introduced to the technicalities.

The book is a triumph of text-book writing, both for the amount of subject matter compressed in its most readable and stimulating chapters and for its excellent illustrations drawn from current events.

Supplemented by a teacher or a book giving fuller and more formal treatment of the technical parts, this work should prove useful for students preparing for examinations of intermediate standard and for students in training colleges. By itself, it gives an excellent introduction to the subject and is recommended to all whose interests lie in the more effective working of their mental powers. M.H.

The Effect of Practice upon Individual Differences: By RUTH EASTWOOD PERL, Ph.D. (Columbia University. pp. 54. $1.00.)

This is one of the publications entitled Archives of Psychology, published by Columbia University under the editorship of Professor Woodworth. The writer gives first a useful survey of the extensive literature of the subject, emphasizing the necessity for careful interpretation of what is meant by "equal practice" and

"equal gain." This is followed by an account of an experiment with four tests on about 100 children, with a wide range of intelligence quotients from 60 to 151. The tests included one simple paper and pencil test almost entirely motor in nature, namely making figures to represent gates consisting of four short vertical lines and a sloping cross line.

The second was Whipple's symbol-digit test, the next a Turkish-English vocabulary test for substitution work, and finally a simple arithmetic test of an "intelligence" type.

The main results confirm hypotheses already put forward on the basis of some other investigations, namely that in *simple* tasks individual differences *decrease* with practice while in more complex ones they *increase*. In the Making of Gates test the individual differences decreased with practice, when the correlation of initial ability and gross gain was used as the indicator of the effect of practice.

Your Mind and Mine: By R. B. CATTELL. (London, G. G. Harrap and Co. pp. 314. 7s. 6d. net.)

Dr. Cattell, whose earlier book *Psychology and Social Progress* received favourable consideration in this Journal and whose contributions to Educational Psychology frequently appear in these pages, here essays another task. As the sub-title of the book indicates, "An Account of Psychology for the Inquiring Layman and the Prospective Student," he has attempted to place his wide and well-organized knowledge of psychology at the disposal of the general reader, but evidently with the hope that the reader will be encouraged to become a student. The style is therefore popular and the topics discussed are such as to stimulate the reader to seek further knowledge. It is regrettable that advice for further reading is not given, and this should be remedied in a second edition. Dr. Cattell is a staunch supporter of William McDougall; he gives a clear exposition of the simpler parts of Spearman's Theory; and sympathetically interprets the elements of the Freudian psychology. In the attempt to present so much in simple language the author has achieved much, and his introduction of brief biographical accounts of some living psychologists is a pleasing feature. The volume can be recommended and should be of service in adult education classes studying psychology.

Child Psychology: By A. T. JERSILD, Ph.D. (New York, Prentice-Hall, Inc. pp. 462. $3.00.)

Professor Jersild gives in this book a summarized account of a great many recent researches on early child psychology, beginning with the very earliest stages. Thus a chapter is included on the new-born child and in all the various topics treated, such as language, emotion, social behaviour, learning, there is traced the development from the earliest beginnings of the phenomena studied. The account is given in non-technical language comprehensible by those not trained in psychology. At the same time the nature of the material is such as to be of interest rather more to the student than the general reader. In such a compass the results of some big enquiries have naturally to be compressed into a small compass and frequently it will seem that generalizations are laid down without the full evidence presented. From the student's point of view it would have been more useful if more exact references to particular parts of the research papers mentioned could have been given. In spite of this, however, the book should serve as a useful introduction to the study of child psychology. C.W.V.

The Ape and the Child: By W. A. KELLOGG and L. A. KELLOGG. (Whittlesey House, McGraw-Hill Book Company, Inc., New York and London. pp. 341. 12s. 6d.)

It is not often that the same book is of interest to the advanced research student and to the general reader. Yet such certainly seems to be the case with the volume before us. Anyone interested in the behaviour of animals could read the greater part of this book with enjoyment, and yet it contains a considerable amount of valuable material for the advanced student of infant life. Professor and Mrs. Kellogg were

sufficiently courageous to bring up a young ape from the age of 7 to 16 months in close association with their little boy of the age of 10 to 19 months. In the preface Professor Kellogg tells us that " the enthusiasm of one of us " in favour of the experiment met with so much resistance from the other that it appeared likely that they would never come to an agreement. In the interests of child psychology we may be thankful for the final arrangement of this second " Kellogg Pact." The ape and the child were continually together and treated as far as possible as two children of the same family, and the ape became intensely attached to that one of the experimenters who attended chiefly to her. The child and the ape played together happily, and the photographs themselves give a good indication of the extent to which the ape adapted itself to human conditions.

The topics treated in the book are much the same as one might get in a volume on the development of the child in the first two years of life. They include chapters dealing with health, eating and sleeping, bodily movements, the senses, play, social behaviour, emotions, learning, intelligence and language. The authors are cautious in drawing inferences from their material on such difficult subjects as the relative importance of environment and heredity. In the chapter headed " Conclusions " they treat separately differences favourable to the child and differences favourable to the ape. Among the relative deficiencies of the ape are the following: The weaker tendency to exploitation and manipulation; attention to stimuli for only a short time; and a lesser tendency to imitation.

The chapter on Social Behaviour also reveals some very interesting differences; for example, the greater tendency of the ape to avoid strange human beings.

The differences favourable to the ape seems to be to a very considerable extent dependent on the greater relative maturity of the ape which naturally matured more rapidly than the human child. The young ape was more co-operative and obedient, though quite capable of sly behaviour. Many accomplishments of the ape showed a faster rate of learning.

An exceedingly interesting fact is one in connection with the development of language. It appeared that the boy made practically no advance at the age of 12 to 14 months in spoken language, though very considerable advance in understanding. The authors in referring to this say " for some strange cause " the child did not progress beyond this level, etc. It would seem possible that the explanation lies largely in other facts mentioned by the authors, namely the strong tendency in the child to imitate the sounds made by the ape, and to use [illegible]
The authors themselves refer to the lack of or at least rare
with other children, as delaying the development of language. I would suggest also that the very fact that the parents were continually occupied in adapting their behaviour to the ape as well as the child would result in a lessening of the tendency to talk so freely with the child as they would have done if he had been alone.

It is impossible to mention all the many points of interest that arise, but on almost every topic of child life there are facts here which are of value and the authors deserve the gratitude of students of child life for the accomplishment of a research of considerable importance. It would be of interest to hear at some later stage whether this peculiar upbringing seemed to leave any special effects upon the child or upon the ape when he was removed, unhappily for him I feel sure, from this kindly and comfortable environment. C.W.V.

Junior Instruction Centres and their Future: a Report to the Carnegie United Kingdom Trust: By VALENTINE A. BELL. (Edinburgh. 1934. pp. xx+106.)

The Carnegie United Kingdom Trustees, seeking to organize and promote social services among young people, found that much work was already being done by different bodies, and they thought it advisable to get a survey, as complete as possible, of these activities. The Trustees found in Mr. Valentine Bell a first-rate investigator to whom the survey could be entrusted. It is due to his research that this extensive and detailed report is now made public by the Trustees, who feel that many people besides themselves will be interested in what is going on.

In an introductory chapter Mr. Bell gives an outline of the schemes for Junior Instruction Centres from November, 1918, to June, 1934, when the Unemployment

Act became law. Discussing the present position (1934) he gives figures showing local variations of unemployment among young people of 16 to 17 years old. The difference between the states in Wales with a limited number of basic occupations, and the Midlands with their numerous opportunities, is most striking, but quite apart from their differences, the crude figures themselves give one to think and indicate the need everywhere for more to be done beyond existing achievements. Extended school age seems to be desirable but already Mr. Bell is able to report that many children stay on at school after attaining the legal school-leaving age.

Boys are not so easily placed as are girls ; and there are some occupations, in increasing numbers under modern industrial conditions, which are essentially juvenile, so that those taking them up at 14 or 15 have to become unemployed at 16 years (p. 18). The next outstanding problem is the 18-21 year group, and the provision of means for avoiding the loss of morale attendant on unemployment and want of something to give occupation. A wide variety of types of young people attend the Centres so far established, and this of course adds to the problems that offer themselves for solution. The Centres appear to be checking tendencies towards juvenile misdemeanour.

Premises and staffing are further difficulties, particularly difficult is it to find the right sort of supervisor. As the study of appropriate curricula indicates, a fresh pedagogic technique must be developed, and the occupations followed in the Centres must have regard to boredom and so on set up by the things a young person has to do every day before and after attending the Centre.

The young people are developing a satisfactory attitude towards the Junior Instruction Centres, a state that has been deliberately sought, but it brings its anxieties. Mr. Bell (Chapter IX) has pointed out what is wanted, and apparently the Carnegie Trust has now plenty to go on with.

A compilation which is to a great extent statistical is not easy reading, but those interested in social service will be amply repaid by the information the research supplies. A.P.B.

The State and Religious Education (being an Examination of the present position with some suggestions for its improvement) : By E. F. BRALEY, M.A., LL.D., and M. C. PETITPIERRE, M.A. (S.P.C.K., London. pp. 157. 3s. 6d.)

The first part of this book is concerned with an analysis of what the schools, primary and secondary, are doing for religious education, and of the attitude of the State to this matter. The authors consider that the State has not made good its claim to educate its citizens " for life " since it has failed to enable them to find " a central philosophy " or " dominant purpose." The Christian religion, able to fill this gap, is, in the authors' view, " the worst taught subject in the curriculum." The data from which these conclusions are drawn are well and usefully set out in the form of extracts from Education Acts, Ministers' speeches, and answers to questionnaires.

Part II attempts constructive help. It gives suggestions for religious education in primary and in post-primary schools, devotes a chapter to suggestions for school worship, and another to the all-important contribution of the training colleges towards religious education.

The authors' question whether undenominational teaching can succeed and suggest that inter-denominational be substituted, since, " Always in the Bible Christianity is faith in a Person through a Society."

The book is worth reading by all who are interested in religious education, particularly, perhaps, for its ruthless unveiling of existing defects. M.H.

Religious Instruction in the Elementary School : By CANON J. R. LUMB, M.A. (S.P.C.K., London pp. 203. 3s. 6d.)

The aim of this book is to help the elementary school teacher to produce " a man whose religion rests upon real foundations." It is, the author tells us, the outcome of an experiment " to bring religious instruction up to the level of the best

taught of the secular subjects;" the book bears the mark of its origin in its real practical and detailed helpfulness in relation to each stage of school life—infant, junior, and senior.

The author makes it clear that religious education includes more than Bible instruction; the spirit of the school and of its teachers are potent factors. He gives concrete suggestions for school prayers, for schemes of work, for syllabuses, for teaching Old and New Testaments, for Missionary teaching, and for the teaching of the Church Catechism. He treats the needs of each grade separately, not omitting those of the teacher, young and old.

The author warns the teacher against teaching things that the children may have to unlearn in later years, he encourages them to improve their own knowledge and recommends useful books for this purpose, more particularly, perhaps, books that will be found useful for school, such as prayers and hymns for children, simple plays to express the teaching, and books to give local colour and background. He encourages teachers to teach the Bible not "in bits" but as "a piece of world history" revealing God, and to show, through the study of missions at home and abroad, that the revelation continues to this day.

The book should find a place in the teachers' section of the school library. All who care for religious education should consult it, irrespective of denomination, for the knowledge it shows of the conditions of work, of the problems involved and of the needs both of pupils and teachers. M.H.

Mental Defect: By LIONEL S. PENROSE. (Sidgwick and Jackson, Ltd. pp. 183. 8s. 6d.)

This is one of the series of text-books of Social Biology edited by Professor Hogben, and the author treats the study of mental deficiency as a branch of human biology. The book is valuable primarily as a description and acute criticism of methods of investigation and of results from the general scientific point of view rather than from the point of view of treatment, although the latter does receive attention. We are especially impressed by the thoroughness with which Dr. Penrose goes into the various types of evidence as to hereditary and environmental causes and indicates the lurking fallacies in certain types of argument. A very wide acquaintance with the most recent literature is shown, and indeed the book is a valuable guide to the student making a special study of this subject. Its clarity makes it, however, suitable also for the non-specialist.

FOREIGN JOURNALS.

Zeitschrift für Pädagogische Psychologie und Jugendkunde: 35 Jahrgang. Nr. 6. Leipzig, 1934.

This issue confirms the idea that the German educational world is recovering from the political events of April, 1933:

(*a*) An article on Fröbel indicates the re-emergence of humanistic tradition.

(*b*) "Experimentelle psychologische Untersuchungen," if only as the title of a paper, marks the re-appearance of the scientific spirit.

(*c*) "Ein Testheftverfahren mit qualitativer Bewertung," whilst still lingering in the vagueness of the qualitative, is preparing the way for a return to the quantitative and the exact.

(*d*) A list of international conferences is another wholesome symptom.

There is still a hankering after the symbolic (Sinnbildliche) and the mood seems rather that of "rationalization," i.e., doing things first and afterwards trying to discover and explain suitable reasons for what has been done. H.R.

Zeitschrift für Pädagogische Psychologie und Jugendkunde: 35 Jahrgang. Nr. 7-8, July-August, 1934. Leipzig.

Contains reports and papers from the fourteenth Congress of the Deutsche Gesellschaft für Psychologie held at Tübingen, May 22-26, 1934. Among these Elisabeth Lippert writes on the psychology of the leader in the old and in the new German youth-movement. One paper deals with the psychology of discipleship.

This seems to be a more valuable number than recent ones, probably worth attention from any students of education who have leisure to read the original for themselves, but not quite worth abstracting.

The picture one now gets of the German educationists is that of people who have been successfully struggling out of delirium back into the daylight of reality. It need not be assumed that convalescence is yet complete. Note that these papers date back to May, i.e., to before the events of June 30th. The critical spirit is awaking. H.R.

Zeitschrift für Padagogische Psychologie und Jugendkunde. Leipzig, Jan., 1935.

Report on p. 41 on the unification of the German Youth Hostels and Country Boarding School movements—Jugendherbergen und Schullandheime. In future the name "Jugendherberge" will imply both movements under joint principles. Individual schools remain economically independent. But schools are available as hostels, and scholars can be received in youth hostels. The youth leaders and schoolmasters co-operate. Boarding school pedagogics remains the affair of the schoolmasters and their association the National-Socialist Lehrerbund. The former magazine of the Schullandheime vanishes, but space is reserved for these interests in the youth-hostel paper *Jugend und Heimat*, and also in the Lehrer Zeitschriften. The teachers maintain contacts with the parents. The new arrangements allow more room for school children to stay on the land. H.R.

Hochschule und Ausland. Jan., 1935.

Bernard Rust, Reichsminister for Education, writes on "The Foundations of National-Socialist Education." Three new departures are being tested experimentally on a small scale even though the desired type of teacher is hardly yet forthcoming. It is not a matter of adding a new subject to the curriculum, which might be done by putting a new text-book into the hands of the teacher, but of creating a new pattern of teacher.

1st. New teacher training colleges are to be started in rural areas or small country towns, because teachers trained in cities are often spoiled for rural schools. The drift from the land to the city is to be reversed by transforming the matter and

methods of teaching and substituting for text-books co-operation in research. Hence these new "Hochschulen für Lehrerbildung" in Hirschberg, Weinheim and Lauenburg.

2nd. Some of the former military institutes—Kadettenanstalten—are being transformed into experimental institutes more in keeping with political ideas. The curriculum will resemble the Realgymnasium, but former directors and head masters are regarded as inadequate for an education outside the classroom based on physical training and community life. Hence men of performance, who have proved themselves as youth leaders or in the field, must be found, regardless of linguistic examinations, and teachers of similar nature whose duty will not be that of academic teaching. For instructional work the leadership might remain with a higher inspector—Oberstudieurat.

3rd. The value of community life in the hands of suitably trained and tested national-socialists, if they can be found, can be developed near the universities by means of the students' community house—Kameradschaftshaus—which aims at more than merely eating and drinking together. University life should not shut itself off from other sections of the population.

4th. The Land Year is a third attempt at transformation. Not only are intending university students to have six months on the land, but the school age for all is to be extended by a whole year to be spent on the land. That will get some young people away from the asphalt deserts of the cities into country camps, away also from their imprisonment in Marxist theories into education through work. In the coming spring 22,000 children will be taken in hand. They must pass the doctor as sound in health. Difficulties, inertias and resistances will be immense. Young and competent teachers have to be discovered and trained. So far there is encouragement; children are well and happy, they are body and soul for Deutschland and the country life. H.R.

VOLUME V. JUNE, 1935. PART 2.

PSYCHOLOGICAL AND OTHER ASPECTS OF RECENT TENDENCIES IN GERMAN EDUCATION.

BY ADAM THORBURN.

I.—*Introductory remarks.*
II.—*German education in retrospect.*
III.—*Hitler's ideas on education.*
IV.—*"Arbeitsdienst."*
V.—*The "Landjahr."*
VI.—*"Staatsjugendtag."*
VII.—*Main existing school types.*
VIII.—*Conclusion.*
Bibliography.

I.—INTRODUCTORY REMARKS.

SINCE the German Revolution of 1933 there have been perhaps the most amazing changes in the educational ideals, if not of actual institutions and curricula, that the Reich has known, and the word "Reich" is used in its most extensive historical meaning. The very few scattered foreign criticisms of the controlled education of to-day are, even where just, a little naive. It would appear to be forgotten that, while Germany has cast totally aside anything that savours of a liberal education, in the past Germany has had its liberal education, and that perhaps more than any country except France. It is impossible to imagine anything more liberally inclined than the multitude of works which appeared in Germany after the Great War. There is also a curious impression that Germany has stumbled, as it were, upon its new educational aims. Let there be no doubt on this point: everything that is taking place in education to-day was planned years ago, and whatever criticisms may be made of these new ideals, it must be emphasized that they are conscious.

Yet despite all that is new, there is much more to come. Does this paper, then, not seem premature? It has been written for two reasons: firstly, as the new German education is not yet definite in form, only principles being agreed upon, it seems pardonable to record progress from time to time; secondly, the Minister of Education, Bernhard Rust, wrote for the January number of *Hochschule und Ausland* a short article in which he sketched a few educational changes in Germany; thus a paper on the subject in English was more or less

forced. Rust's article will be interpreted and very considerably expanded. If the tone of his article is not very generous to previous education in Germany, it is of quite misleading modesty with regard to the new education, as some of the most important innovations are scarcely mentioned. In what follows, the writer will upon occasion criticize where criticism seems justifiable. There will not be criticism based on principle; criticism, certainly censure, of points of view, would be an impertinence and profitless. The writer aims at giving and interpreting information.

For the benefit of any who wish to read widely on the subject, a bibliography is given at the end. This has been used for the general checking up of facts and references, but it will be clear that, in a time of revolutionary ferment, books on new educational movements do not provide the finest source of information. Most information can be obtained by following the German daily press and, more particularly, the journals of the teachers' organizations for the last year and a half. These are not, however, accessible to all, or not easily so. The books recommended will be found valuable, though not unreservedly so, as they are written in the enthusiasm of partisanship. Also, there cannot be much objective examination of the problems on account of the absence of free criticism in Germany to-day. The writer does not wish to discuss the merits or demerits of free criticism: he merely points out the difficulty of examining both sides of the case. One main source of this article can be but vaguely defined as personal experience extending over the last dozen years, and "personal experience" must be considered a comprehensive term involving observation, discussion, desultory information, in short, all that one does acquire without any attempt at organization or classification of the incidental.

A word of protest must be uttered. Almost all the literature that has appeared in Germany since 1933 on our subject makes difficult and often exasperating reading. Even when a good case is being advocated, the eloquence is nullified by the attitude adopted towards what has gone before. With few, very few creditable exceptions, protagonists of the new expend energy miscalling the old. Honour is seldom given where the writer knows it is due. Much that was admirable in the education of the Weimar Republic is ignored or blackguarded. The faults, which admittedly existed, are magnified. Much that has been retained to-day is the discovery of yesterday. Much that is proclaimed to be new, the writer has seen a number of years ago in Germany. Even works on Soviet education or the speeches of Soviet educators—with all the absurdities of modern Russian self-criticism—do permit and

encourage criticisms and suggestions. The corresponding German literature is frequently naive. There is rarely an admission that ideals and attainments do not absolutely coincide. Of course, the German revolutionaries have not the advantages of eighteen years of consolidation behind them, as the other experimenters in education, the Russians, have. It is hard on the investigator of contemporary German education, and harder still for him who seeks the best therein. It is to be hoped when the German revolutionary ardour has cooled somewhat, writings will be of a more convincing and more mature order.

II.—GERMAN EDUCATION IN RETROSPECT.

The words " German Education " call forth very different associations, varying with the generation of the person concerned. The pre-war generation visualizes perhaps a classical Gymnasium[1]; an incredibly difficult Abiturientenzeugnis[2]; two distinct streams, never joining, the elementary school system and the exclusive secondary school system; the atmosphere of Wildenbruch's " *Das edle Blut* "; school education purely a matter of the intellect, with the psychological approach unknown; and schoolmasters as satirized by Otto Ernst in " *Flachsmann als Erzieher.*"

The post-war generation pictures Alt Heidelberg robbed of its poetic extravagances through poverty; " Student sein, wenn die Veilchen blühn " considered a piece of tearful, antiquated romanticism; life no longer seen through so very German rose-coloured spectacles but through the mercilessly frank lenses of the Neue Sachlichkeit[3]; children and young men and women breaking away from parental authority; Wandervögel and the Youth Movement (begun about 1900 but not really widespread until after the War); contempt for the old and worship of the new; liberalism and Marxism almost synonymous, a freedom of which old Germany knew naught and, be it added, which we, reared in Great Britain, could hardly credit when we beheld it with our own eyes. Out of school there was that careless rapture such as is the glorious experience of the impressionable humanitarian on reading of the aims and aspirations of Russian Communism or on setting his foot for the first time on Russian soil. To be young in post-war Germany was very Heaven. To study, discuss, and toy in unrestricted intellectual freedom with the most advanced, and sometimes the most fantastic, theories, gave an exquisite sensation, a delicious feeling of life comparable only

[1] Secondary school with emphasis on classical languages.
[2] English Higher School Certificate, Scottish Higher Leaving Certificate.
[3] New Realism.

to rare moments of exultation, something which was to compensate with the passing of years for the writer's indubitably sound and profitable but emotionally rather humdrum student days in Great Britain. In school the change was similar: even exigencies of curricula were not dictated from above, but were experienced by the pupils themselves. One thinks, for example, of the delightful incident illustrated by Zeydler of the Hamburg Experimental Schools; the teacher came into the room, strummed a song, in which the class joined lustily, and then asked the pupils what they wished to do next. "Gymnastics!" they roared. All made for the gymnasium—and found other classes swarming there with the same intention! Gradually it was brought home to the pupils that some order and regulated curriculum were necessary in the interests of their own happiness. Nothing could have been more purely in the spirit of Rousseau.[1]

This post-war education in Germany fired the admiration of the world. Germany was leading, not merely as it had always done, but with increased vigour and an imagination and daring which had not been thought possible outside the pages of a book. Over a dozen years later modifications were felt to be impending, and in 1933 the National Socialist Party came into power. Far-reaching alterations were made in the form of political government: changes had to take place in the intellectual equipment of the future governors or governed. The youth of the Weimar Republic[2] had been trained on a liberal and individualist basis. An entirely different conception was to prevail under the National Socialist rule. Foreign critics prophesied that Germany had ceased to lead the world in education, that, in fact, both education and civilization were at an end in that country. By government decree, as it were, Germany's youth had ceased to be idealistic, according to the critics. It was not merely an ill-informed or ill-intentioned press that said so. A very short time ago Dr. Cyril Norwood expressed the opinion that Germany was following "False gods and pursuing materialism." Whether the gods are false or not is a matter of opinion: the view that Germans can be materialistic is either sincere ignorance or a determination to prejudice the case against Germany. Some appear to confuse *furor teutonicus* with materialism! The whole of German literature, the experience of any who know Germans intimately, countless blunders of

[1] It is not suggested that every school in Germany knew such delirious freedom. The example is, however, indicative of a very general spirit, so general, indeed, that the Government of to-day deplores it upon every occasion!

[2] While Germany is still nominally a republic and the constitution of Weimar has not been abolished, the writer wishes to refer to the Reich from 1919 to 1933 by its popular name, "Weimar Republic," in order to avoid confusion.

simple faith, all show the average German to be the reverse of materialistic. Had he been materialistic, he would probably have been happier. He has done things which no level-headed Anglo-Saxon would have considered for a moment. He has always suffered, almost certainly he is suffering even to-day, from a "romantisme incurable", though nothing would be more strenuously denied. The German is an incorrigible idealist, a sentimentalist, if we will, and this point must be recognized and conceded before any attempt is made to understand any feature of German education, not merely now, but at any time.

The post-war period in Germany may have suffered from the too great gulf between the intellectuals and the working classes. The gulf was certainly different from that between the highly intellectual rulers and the lower classes in pre-war days, yet in the post-war days there was undoubtedly a gulf, too, even if of a different nature, that gulf which is inevitable where there are liberal, individualist leaders of the Marxist[1] type. Such leaders do not intend, do not wish for a division, and all their writings and speeches show them to be actuated by the noblest of motives. To a leader of such a sort can never be attributed the motto "*odio profanum vulgus.*" The hatred may disappear, yet the "*profanum vulgus*" remains, an uncomfortable neighbour for the well-meaning, kindly, humanitarian, yet highly cultured intellectual. Such a situation should be regarded as inevitable where political developments have not taken place quickly enough for the intellectual leaders, who, with all their merits, are still necessarily occupied spiritually with the ideal State of their philosophy. This will be granted by anyone who followed the politics of the Weimar Republic. The greatest admirer of the Republic, and the writer was an admirer, must own that the intellectuals had lost touch with the people. The disintegration was, of course, inevitable, but it was none the less real. The disintegration might be even considered a good thing, but it must be realized that nothing could commend itself less to the forces which were to sweep over Germany in 1933. Unity has now, rightly or wrongly, become the watchword. Speeches against intellectuals, looking so strange and so terrible in newspaper headlines, become at least comprehensible. It is proclaimed that there must be education for unity and that this must be done with a will.

A new standard of values had to be created. This could have nothing in common with the pre-war criterion. Superficially it bore a resemblance

[1] It seems wise here to use the German form "Marxist" to denote all left wing intellectuals, rather than to write of Communists and Socialists, which would convey a false impression to the Anglo-Saxon reader.

to the ideals on paper of the Weimar Republic, and the superficial resemblance attracted millions. The differences were accepted by some and forced upon others. One pauses at the thought that it was a German, Friedrich Nietzsche, who coined the expression, " Umwertung aller Werte," a re-valuation of all values. Since his words were written to-day's values are the third moral standard in Germany.

Clearly, an examination of the present system of education in Germany cannot start with a description of the curriculum. The new education in Germany began when men from middle class circles entered the N.S.D.A.P.[1] Not a little courage and character were called for in associating with the humblest of the working classes. Let it be noticed, that despite manifestoes and theories, this had not taken place under the Social Democrats of the Weimar Republic. In the S.A. (Storm Troops) began to be cultivated the more heroic qualities in contrast to the lyrical qualities of the earlier Wandervögel. Courage, resoluteness, loyalty, order became the slogans of the day. Schiller was the teacher, rather than the reposeful Greek, Johann Wolfgang von Goethe. Out of what the National Socialists considered the chaos of an all too individualistic age, Hitler and his followers began to create cosmos as they saw it. After the seizure of power in 1933, when political tension became somewhat relieved, education in the school began to receive attention. Reform was interpreted by some as involving technical alterations in the curriculum. The N.S.D.A.P., however, grasped the fact that most important was to adapt the child for life, that is, life as it was to be in the new German state. We see here a great contrast to the immediately post-war ideals of adapting the child to a life which did not exist out of books, for it must be remembered that nearly the same economic conventions remained after the War as had held sway before it. It is as if the N.S.D.A.P. were moved by Schleiermacher's complaint that " if the transition from the school to life is not made directly, we have either been travelling on a false road or we did not begin aright."

Educational reform is looked upon as being in an experimental state, as it is in the U.S.S.R. Both countries are setting up a new standard of values. Both must move cautiously, as educational errors are discovered, not early but only when it is too late. New methods and new institutions could not appear immediately in Germany. Even the preparation of the teacher was not a simple matter. More was called for than a mere reorganization of the training college curriculum. To train the teacher to represent the ideals of the N.S.D.A.P. was not the work of a moment.

[1] Nationalsozialistische deutsche Arbeiterpartei = German National Socialist Workers' Party.

III.—HITLER'S IDEAS ON EDUCATION.

Brought up in a western democracy, we do not expect our King or our Prime Minister to hold or express views on education. Least of all should we expect such views, if expressed, to have the slightest influence in forming the national education. Such matters we leave to the specialist. The Germans formerly adopted much the same attitude. It is this very attitude, however, which the National Socialist Party has set out to combat. Only one completely ignorant of all that has happened since the 1933 revolution would be surprised that the opinions of the leader, Adolf Hitler, should have an effect on the educational ideals of new Germany. It is not merely or even chiefly because Hitler is Reichskanzler, but rather because he is the man who fought for all that New Germany reveres, that his ideas on education have had a great influence and in the future will probably have still greater weight. It must be fully grasped that to the leader are attributed qualities almost Godlike, and as the leader and those in power are at one in their philosophy, such educational aims meet few obstacles. It has seemed advisable to sketch briefly Hitler's views as given in his book, *Mein Kampf* (My Struggle). Hitler does not attempt, of course, to dictate on details of methodology or on the planning of the curriculum. He offers broad outlines to be worked out by educational experts. An examination of these outlines will render easier comprehension of what follows.

The aim of education is not the hammering in of dry-as-dust knowledge, the production of blue stockings. The first aim is the maintenance of a pure and healthy race, largely by means of physical training and by observing the principles of racial hygiene in order to introduce no elements from another race which is not closely connected in blood. The latter means in Germany, the safe-guarding of the Aryan. Non-Aryan elements are not considered unworthy in themselves, but merely harmful for Teutonic races. The implications for the increased importance of biology in the curriculum are too obvious to require stating. Physical culture is a matter for the State, particularly in the later stages of education. The body is to be trained to withstand hardships. Hitler goes so far in his logic as to demand two periods a day of gymnastics. The value of sport, particularly team games, is emphasized. Boxing is mentioned especially. It will be interesting to see how far Germany, where boxing for schools has played little or no part, will put Hitler's claims into practice. Physical perfection is also to lead to joy in healthy living, to the erotic side, thereby eliminating where possible sexual abnormality. The state is never to lose contact with the physical

development of men and women. When out of his teens, the boy is to become a man in the army. For girls the aim is never to be forgotten, namely, that they are the coming mothers.

Hitler's second aim is that of character training. Cheating is to be discouraged, there shall be no informing in class, no telling tales out of school. (It would be wrong to imagine that all this was rife previously, but it is vital to appreciate the stress which Hitler places on character training.) There is to be acceptance in silence even of a wrong. Clamouring over an injustice is considered weak. Obedience is expected at all costs, in accordance with the principle of authority. While demanding obedience from the young to their superiors, Hitler at the same time postulates responsibility from the leader to the led. With Seneca, Hitler considers that it is not because things are difficult that we do not dare, but that they are difficult, because we do not dare. A joy in responsibility and training of will are of the utmost moment.

These two primary aims appear far from new in English. Written in German, they are more revolutionary. Even if we keep in mind the many remarkable performances of the German educational system in the past, it can be said in all fairness that physical training was completely at a discount and that character training, in the English sense, scarcely existed, for the young German undeniably lacked confidence and self-reliance, in a certain measure at least. (Here the words "English sense" have been used for the sake of giving an easily understood comparison. Much in the modern German system has an English surface. The writer asks that great care should be exercised and that English influence should not be read too much into misleading similarities.)

The third aim is that of ordinary instruction. Here the guiding principle should be that of the philosopher Lagarde, "Education is the capacity for separating the important from the unimportant and then stressing the former." Knowledge should be useful and direct. Too many modern languages should not be studied by the majority, who are unable to profit thereby. History should not for most pupils be in too great detail. The practical lessons to be learned from the past should be made amply clear and, of course, must be interpreted from the racial standpoint. The idealistic side of education should be stressed to counteract widespread materialism. The ideal should be a general education. Only later should specialization be begun, otherwise children are brought up to worship technical ability at the expense of higher national ideals. In the study of antiquity, Hitler wishes due consideration to be paid to Greece, but Rome is to be considered of still greater importance. With regard to patriotic education, Hitler stresses Bismarck's assertion

that "In place of love for their mother country the Germans had at heart a feeling for dynasties." Real patriotic education must inculcate a love of country. In Kulturgeschichte (the history of a nation's cultural development) importance is to be placed, for example, less on the fact that an inventor made an invencion than upon the fact that he was a living man and a compatriot. This example is illuminating and vital. No child (as he is a future citizen and parent) must leave school without fully understanding the importance of race and the principles of racial hygiene and the consequences of failure to observe them.

A number of experiments in education will now be considered. The order in which they are taken may seem strange, and their direct connection with education may not be very obvious, but the writer feels confident about both choice and order.

IV.—ARBEITSDIENST—LABOUR SERVICE.

The Arbeitsdienst is not directly concerned with education in the usually accepted sense of the word, and yet in view of its being considered essentially as an educational instrument, and an extremely important one at that, in the new Germany, it must be briefly examined. The thought behind the Arbeitsdienst is emphatically not that of combating unemployment, as has been frequently assumed, both from its superficial characteristics and also from its apparent similarity to various uncoordinated forms of Arbeitsdienst under previous German post-war governments, particularly that of Brüning. The true conception of the new Arbeitsdienst can be understood only as an expression of German idealism. There arose earlier the Artamanenbewegung, which tried to struggle against the flight from the country to the city. (The very name "Artam," which is that of an Indo-Germanic deity and means "protector of the soil," throws a light both upon the early movement and also gives a key to the present day institution.) The Artamanen came from all ranks of life, learned to work on the land, and helped the peasants. The National Socialist Government introduced the Arbeitsdienst on a grand scale, with reduction of unemployment only as a consideration of secondary importance. Undoubtedly unemployment was reduced but this was not the aim, however valuable the additional result. While numbers of youths and girls work in camps in the country and thereby reduce the numbers of unemployed in the cities, food and clothing must be supplied, buildings must be constructed, tools, crockery, and so on are required, therefore work is given to thousands of skilled workmen and to factories. For every person who takes part in the Arbeitsdienst, at least two skilled workmen are indirectly employed. A pressing

problem for Germany to-day is the extending of the sources of food supply. The international blockade during the War is remembered only too well. There are great territories in Germany which are at present swamps. These can be cleared, drained, and made habitable and capable of producing large quantities of food. Another matter of urgency is the attracting of thousands, and in time, millions from the cities, which the Government is determined to do at all costs. The city is regarded as being one of the most unhealthy moral influences in the country. Above all, there is the permanent need, the purely idealistic desire, to move young Germany to the land for a time at least as an educational and cultural device. Working on the land, learning farming, understanding the relation of the country to the town, realizing the significance of food production, taking part in and appreciating irrigation, living the best part of the day in the open air, existing naturally, mixing with country people, sleeping, eating, and working beside others of one's own age—all this cannot be denied to be one of the most amazing experiments ever tried. It is, as it is claimed to be, a widespread system of popular education. There is no likelihood of over-production and there is enough work for all. There is enough to occupy half a million men and girls from all ranks of society for twenty years. It is interesting for our purpose to note that while a certain amount of very heavy work is done by machinery, for example, the turning over of wide stretches of moorland, work tends to be done by hand, as this is more educative.

The free time of those taking part in the Arbeitsdienst must be spent profitably. The authorities, in accordance with their anti-liberal principles, do not permit the volunteers[1] to indulge in anything in leisure hours which might undo the educative life of the camp. There is instruction given in political matters, the principles of National Socialism, the relation of the individual to the State, history (in which the virtues of the old Germanic tribes are extolled), the stressing of the heroic (as is so characteristic now of German education as a whole), the importance of racial purity, honour, the value of family life, Blut und Boden, the principles of leadership and such topics, always treated clearly and simply, for it is to be remembered that not all have had the same previous education. In fact, the volunteers come from every social class, employed and unemployed alike. Those who are capable and wish to develop themselves further intellectually can avail themselves of the camp libraries[2] for books on politics, history, science, and the like. As else-

[1] So-called from the original name of Freiwillige, because in its initial stages the Arbeitsdienst was voluntary.

[2] Our minds naturally turn to the "Lenin Corner," a feature of every Soviet ship, factory, club, etc., with corresponding library of solely instructive works.

where in Germany, of course, it is no longer possible to read absolutely at will. Certain books are banned.

Amateur theatricals are performed. Choirs and bands practice and entertain on occasion. Folk dancing has its part. In short, the recreational side resembles on a more advanced scale that of the Landjahr. (See Section V.)

It is a matter of no moment from which social class the young volunteer comes. He may be the son of a university professor or that of a common workman. All are treated alike. The age limits are from seventeen to twenty-five. When first introduced, the Arbeitsdienst naturally drew most recruits from among the unemployed. Now, with service virtually compulsory[1] this proportion becomes more and more upset. The number of city dwellers continues, however, to preponderate. Students from universities are recommended to apply for places in the camps before actually beginning their courses. Those who have already begun are expected to put in their period not later than the second half-year of study, if possible. The psychological importance of this mixing of student and workman is obvious. The workman learns the full meaning of study to the student and the student comes to appreciate the point of view of the manual labourer. One cannot forbear to think of the older German songs, books, and general attitude of the student towards the Philister! While, however, few would deny the educative value of such intercourse, and while the ideal is so often realized, it must be admitted in truth that workers and students, for example, sometimes "mix" with difficulty. When a student complains that what disgusts him about the Arbeitsdienst is "the way the young working men spit at meals," we should see this for no more than what it is, a comparison of standards in table manners. The psychological effect of spitting at meals with regard to those who do not spit at meals may tamper with the psychological effect of seating workmen and students together, but it does not alter the undeniably high ideal of "mixing" different social classes. This example well illustrates the admirable aims in much of the new German education and the occasional difficulty of realizing them all.

The Arbeitsdienst also concerns women but at present the women's section is in process of re-organization. A great deal might be said about the part played by the Arbeitsdienst because it is so comprehensive, but it has seemed advisable to bear exigencies of space in mind and touch upon the purely educational and psychological aspects.

[1] The certificate issued to the volunteer after his period of stay tends to give him preference in applying for a post later.

V.—The Landjahr.

A special means of awakening the child's sense of responsibility towards and joy in community life is the institution known as the Landjahr. This is frequently confused abroad with Labour Service. Also, it is not yet so widespread as we are apt to believe from foreign newspaper accounts. This experiment may prove to be one of the most successful of all undertaken. It is hoped that the time will come when participation will be compulsory for all town children between fourteen and fifteen years of age who are leaving the Volksschule and are not going on to a secondary school. At the same time it is considered impossible that this should be brought about for some years yet.

The Landjahr began in Prussia. In April, 1934, 22,000 boys and girls were sent to Landheime. These are residential schools of a simple nature, not to be confused with somewhat similar institutions of a recreational type under the Weimar Republic. For 1935 arrangements were made to house 60,000 children. The aim is to free the child, for a time at least, from the unhealthy influence of town life. The town child is to be made familiar with the simpler needs of the country. He learns the importance of the country in the matter of food production. Here, too, the Blut und Boden principle operates. The child, who has been uprooted and left in the city, through economic causes, has an opportunity of taking root in the country. The natural mode of life of the peasant is opened up to him. Living for three-quarters of a year with other children they make friendships, seek to overcome little enmities, adjust themselves to living with their fellows, and generally feel part of a whole, working and living for the common good. It would be strange to question the sound psychology behind such practices. New districts are experienced in the best possible way. Book knowledge is made vivid. Journeys, sometimes lasting a week or two are undertaken, largely on foot. There are Heime with about thirty children under the administration of a leader and his assistant, some with sixty, and a few with ninety. Experience has shown thirty to be the admirable number. These Heime, which are generally old castles, or large farm houses converted, are chosen because they are far from cities, near villages, or in some quiet spot by the sea.

How is the time spent? The girls are prepared for later life. Sport plays its part, though the régime is somewhat hostile to excessive development of women in this respect. Swimming is particularly popular. Folk-dancing is stressed. There is, as might be expected, an abundance of musical training of a simpler nature. The folk-song is here the centre. Choral verse speaking is cultivated. In the evenings

there are entertainments in the nature of a concert or the performance of a play. Each girl in turn is expected to arrange evenings of this sort, in order to give her practice in organization and also to help her to overcome shyness and conduct herself with dignity before her friends. There is practical needlework for each girl to do. The girls are also expected to organize the preparation of meals occasionally—under supervision—and also have to learn the arithmetical side of housekeeping. To prevent any feeling of superiority in the better-dressed girl towards her poorer neighbour all must wear the same dress, that of the B.D.M. (Bund deutscher Mädel), an association of German girls which corresponds to Hitlerjugend.

A somewhat similar life is led by the boys in their Heime in so far as athletics and entertainments are concerned. A good deal of handwork is done. Each Heim tries to build up its own band. At appropriate times the boys—or girls, as the case may be—give assistance as frequently as possible to nearby farms, but never at the expense of ordinary labourers. Here there is a subtle aim, namely, that many children may stay for good on the land. Actually this happens very often. Ultimately city population will thus decrease in favour of the country. The Landjahr aims at uniting work and pleasure but it is not, any more than the Arbeitsdienst, an institution for providing cheap labour. In the Heime of both sexes there is some form of vocational guidance given at the end of the stay.

The Landjahr stands and falls, as is always emphasized in connection with similar organizations, with the leader. In 1934, eighteen leaders' training schools were held in Prussia for a month's course in the principles of leadership. In the examination, which was, of course, practical and not written, only 1,400 passed out of 4,000. The qualities demanded are high. The majority are at present men and women who have had experience as teachers of ordinary subjects, crafts, gymnastics, and so on. This fact applies to the Landjahr leaders more than to leaders of most other organizations, where teaching is only one of many professions represented. While the number of places is limited and the Landjahr operates on a voluntary principle, Berlin, for example, has already decreed that no youths or girls will be employed by the municipality, unless they have a certificate proving that they have participated in the Landjahr. This applies, of course, only to those who return to the cities and who have decided not to remain on the land. This will inevitably spread, whenever means allow, to the whole Reich. Further, it is equally certain that in time no young persons will find employment of any sort unless they have spent their year on the land.

VI.—STAATSJUGENDTAG (NATIONAL YOUTH DAY).

The rather astonishing expression " Five-Day Week " can be heard used in German schools to-day. It must be realized that German elementary, senior (in English sense), and secondary schools have always been held on Saturdays. On the other hand, afternoon sessions have been unknown, except for voluntary music, handicraft, and games. It was found after 1933 that the widespread Youth Organization for children from ten to eighteen was taking children away from the family for too long, particularly on Sundays. On this account the Minister of Education, Rust, and the Youth Leader for the Reich, Baldur von Schirach,[1] decreed that in the case of children from ten to fourteen years of age, i.e. Jungvolk and Jungmädel (the organizations of boys and girls—sections of the Hitlerjugend), Sunday should be left free for the family. The Jungvolk and Jungmädel got in return Saturday for their organized activities. Previously Saturday belonged to the school. On Saturday the boys and girls are prepared physically and spiritually to be later valuable members of the National Socialist community. Children of every social class participate. The boys march out into the woods or into the country, engage in something similar to scouting manœuvres and learn how to use the compass and how to read maps. Tents are built. There is practice in cooking and generally the children learn how to do things for themselves. They perform physical exercises, swim, and engage in most sports common in Germany: everything is done in a disciplined fashion. There is also insight given into the doctrines of the National Socialist state, the life and struggles of Hitler, the fight of the Party[2] for power before 1933, whereby the new and valuable aspects of National Socialist philosophy are stressed. The fundamental beliefs of the Party are explained to the children by means of an interpretation of the famous twenty-five points of the Party programme. There emphasis is laid upon the principle that the community comes before the individual (*Gemeinnutz geht vor Eigennutz*). Endeavour is also made to awaken the child's sense of responsibility with regard to the need for racial purity. The songs of the youth organization are sung and their books and periodicals are read. Thus the children are gradually initiated into the National Socialist outlook. To keep this goal clearly before their minds, one evening in the week is devoted, in addition to Saturday, to attendance in a Heim (house or home) in the town. The training of girls is similar, womanly qualities here being

[1] For an interesting sidelight on the Youth Organizations—and perhaps on Germany as a whole—the reader should look carefully at the name of the leader, Baldur von Schirach !

[2] N.S.D.A.P.

kept in the foreground. For all the principle holds that youth shall be led by youth, though this is by no means a new principle in Germany. The leaders are older boys and girls, though it is to be borne in mind that these are not all school pupils. Some are young clerks, shop assistants, or apprentices. A difficulty which has not yet been overcome is that business people rarely are willing to excuse their assistants on Saturdays. Whether the Staatsjugendtag (introduced in 1934) will fulfil all expectations depends upon how far the very youthful leaders are equal to the task. Not in every case have enthusiasm and the best of intentions been enough.

As, however, approximately only 65 per cent of the school children (it was not possible to obtain the exact number) are members of the Jungvolk and Jungmädel, the others have lessons according to a curriculum which leads to a somewhat similar result as the training given in the youth organizations does. For these children (from ten to fourteen) there are two periods of political instruction, two of physical exercises, and one of handicraft. (Non-Aryan pupils are not required to attend the classes in political matters.) The instruction is given by the appropriate teachers and this professional instruction is in many cases superior to that given by juvenile leaders in the Party youth organization. Although now the school week is one day shorter, schools are expected as far as possible to avoid reduction of the number of periods. This problem is solved to a certain extent by what is called Querverbindung (treating allied subjects together where possible). Educationally this is welcome in order to avoid subjects being isolated as is so common everywhere in the world. Also, an additional period has been given to certain weekdays and two of the three gymnastics periods are now transferred to Saturday. It must be admitted, however, that it has not been possible to avoid a certain reduction in the number of periods devoted to purely instructional subjects.

We see that the introduction of the Staatsjugendtag has been made with the intention of bridging over class differences, not by means of class hatred, but by means of intercourse and working for the common good, particularly as secondary, non-secondary school pupils, apprentices, and so on all come together, and thus to build up a new Germany in the spirit of the National Socialist State. Otherwise the greater part of the children's time would be occupied at school with the acquiring of book knowledge, while the Party ideal is, first to train character, and then to instruct. Having been taken from the school, Saturday must not be a mere repetition of the old school instruction. The words of Hitler are thus adequately interpreted.

Hitlerjugend.

All the boys' youth organizations are really included in the term "Hitlerjugend," but in practice this designation is reserved for those from fourteen to eighteen. These pupils, boys and girls alike, have Saturday school sessions as before. Those who are leaders of groups in the Jungvolk or the Jungmädel are excused. The others have the normal time-table. The activities of the Hitlerjugend (fourteen—eighteen) are somewhat similar to those of the younger organizations. Greater physical and mental demands are, naturally, made on the older pupils. Sunday is the main day for the training of the Hitlerjugend (older section). Vacations are spent in camps and on walking tours. There is also a movement afoot to introduce the Staatsjugendtag for those between fourteen and eighteen. It is important to note that all children between fourteen and eighteen can be members of the Hitlerjugend, irrespective of whether they attend school or not. Membership is voluntary for all.

In order to have a clearer grasp of the ramifications of these general youth organizations, the following table should be studied:

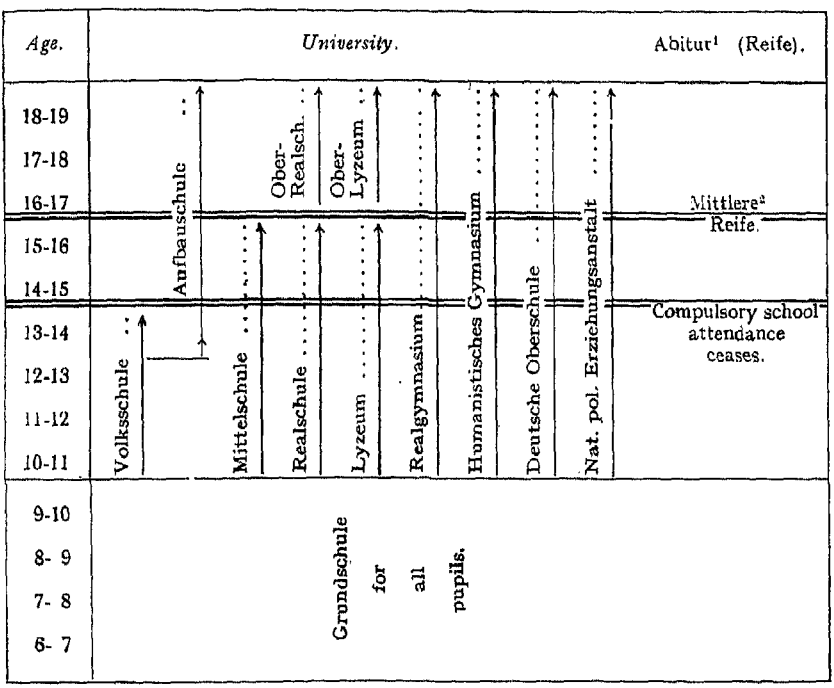
Hitlerjugend (in wide sense of word):

Boys:	*Girls*:
10-14 Jungvolk.	Jungmädel.
14-18 Hitlerjugend.	B.D.M. (Bund deutscher Mädel).
After 18 S.A. or S.S. (Storm Troopers or Black Guards.)	N.S.—Frauenschaft.

Individualistic education is thus replaced by collective education which makes a great claim on the time of the young. As this institution has been in existence for a very short time, children are, as always, most enthusiastic about their youth organizations. Whether, however, they will in the future be so full of enthusiasm, only time will tell. In youth there is a natural opposition to what is old, and much that is really quite new is already beginning to seem old to the children. There are indications that a certain number are rather tired of their group activities already. Occasionally a very curious situation arises; some pupils become bored with the efforts of their older leaders to discipline, interest, and instruct them, play truant from their group meetings of the youth organizations, and come to school on Saturday morning to hear their more interesting teacher! Youthful energy is not unbounded. Much will depend on the leaders, their careful training, and their character and power to influence, control, and interest the young in their charge.

VII.—MAIN EXISTING SCHOOL TYPES.

As yet the actual schools have not been greatly altered and it would be both inappropriate and unnecessary to give a detailed account of the system. Such an account can be obtained from the ordinary source, yet it might be more convenient for the reader if he is able to see at a glance the briefest possible sketch of the principal educational institutions as they are at present. It must be remembered that the schools of the present day are still in the main the schools of the post-war period, even though some alterations have been made, in order to adapt them more to the new national ideals. It is expected that this year very considerable school reforms will be made.



For the reason given, only a few types of schools will be mentioned which are likely to be of importance for the coming school.

After the War, all private preparatory schools attended by children of financially well-placed parents were closed by government decree.

[1] [2] For convenience the Abitur may be likened to the English Higher School Certificate and the Mittlere Reife to the S.C., though the German forms are more advanced.

Children of all classes had then and still have to attend the public elementary school known as the Grundschule, which is intended to foster community ideals. Due credit must be given to the Weimar Republic for this institution. Admission to the secondary school was then and still is dependent upon ability. Attendance begins at the age of six and continues up to ten. While prophecy is dangerous, it is highly probable that the Grundschule will be retained, as it is in harmony with the new political ideals. The desirability of increasing the period of stay is being widely discussed at the moment.

Another type created after 1918 is the Deutsche Oberschule, a secondary school, where the main subjects are German, history, biology, and geography, with English as the first foreign language. The name of this type of school gives an indication as to its bias. The type also is in sympathy with the demands to-day for an essentially German secondary school. It may, therefore, with some confidence be expected that the Deutsche Oberschule will be borne in mind in the anticipated school reform.

A further important school set up after the War is the Aufbauschule. Before the War there was no chance of secondary school education for the child who developed late and passed on to the Volksschule (modern English senior school). He was forced to remain in the Volksschule. The only possibility of continuing intellectual education was by passing from the Volksschule to a Lehrerseminar (for the training of elementary school teachers) with a six years' course. About the age of thirteen, that is, in the last year before leaving the Volksschule at fourteen, gifted children may pass on to secondary education by entering the Aufbauschule. In this school a six years' course up to the Abitur (Leaving Certificate) has a curriculum somewhat similar to that of the Deutsche Oberschule or Oberrealschule, both of which, however, have the usual German secondary school nine years' course. Schools of this sort are well suited to country districts where children in less prosperous circumstances can obtain secondary education and with less expenditure of time and money than at an ordinary secondary school. There is likelihood of the Aufbauschule also playing a large part in the new system. While it would scarcely be profitable to discuss the many plans put forward for school reform, it might be interesting to point out that in most secondary schools English will probably play a still greater part than heretofore.

A school called the Nationalpolitische Erziehungsanstalt has been created by the National Socialist Government. While it cannot be called absolutely new in its ordinary teaching subjects and totally dissimilar to any previous type, its bias entitles it to a separate, if brief, examination.

Nationalpolitische Erziehungsanstalten.

While every educational institution in Germany now is permeated with the aims of the N.S.D.A.P., the Nationalpolitische Erziehungsanstalten might be mentioned particularly as fulfilling more than any other Party ideals. A number of earlier Kadettenanstalten (for the training of army officers) and some Internatsanstalten (residential schools), such as those in Plön, Köslin, Potsdam/Neuzelle, Spandau, Wahlstatt, Naumburg, Oranienstein, Stuhm, and Ilfeld, have been converted into Nationalpolitische Erziehungsanstalten. Such schools can scarcely be called a special type in themselves, as their curricula correspond in the main to those of the Deutsche Oberschulen and Oberrealschulen (both secondary schools with little stress on the Classics), yet they are the model schools for the development of youth on the purest National Socialist lines. As a reaction against the stressing of the individual in post-war schools, here the stress is laid again in accordance with the principles of the N.S.D.A.P. on the community. Character training is of the utmost importance, every effort is made to cure cheating, pupils are brought up to obey their teachers, as it is constantly emphasized that only those who have learned to obey can ever hope to be good leaders, and particularly valuable is the fact that the pupils live in. This last-mentioned fact may seem a little inconsistent. Here family life, which is considered all important, yields place to the still greater need for training leaders. Living-in is regarded as an ideal in German schools and universities to-day, though it has frequently, for financial reasons, been found impracticable. While curricula vary, such subjects are found in addition to the ordinary school subjects, as fencing, riding, rowing, swimming, gliding, motor-cycling, and motor-car driving. The various games and forms of athletics common in Germany are played and there is Sandkasten practice (arranging and re-arranging sand in a very small artificially constructed region to demonstrate methods of attack and defence). The curriculum in Backnang, one of the latest of these schools, in Württemberg, devotes a whole day to physical exercises and games. The subjects which form the centre of racial-national culture are German, history, geography, biology, music, and drawing, and a weekly lesson in political instruction, which, of course, takes into consideration all the material learned and does not confine itself solely to the syllabus. Philosophy has been introduced for the older pupils. Music has appeared as a compulsory subject with two periods a week. All pupils are in the Hitlerjugend. An S.A. officer is responsible for physical exercises. Thus Party connections are very distinct. The great majority of the pupils have been selected from the

Hitlerjugend. One cannot help being reminded of the Young Pioneers' Camps in Soviet Russia where pupils are selected according to character and also to some extent according to political reliability. The intention of educating a ruling class is clear.

All classes of society are represented. In the selection care is taken that the children have already shown some qualities of leadership and are of exemplary character. The head master is empowered to expel any boy who shows himself unworthy and to take in his place a boy from another type of school if the parents wish it and if the boy in question seems suitable. It is interesting to note that in the lowest class (age fourteen) there may not be more than thirty pupils. Fees are arranged according to the income of the parents.

VIII.—Conclusion.

It would be going beyond the intentions of the writer of this article to sum up, to draw conclusions, to point out morals, to estimate the value of the innovations and the psychological ideas behind them in the new education in Germany. We should thereby be involved in the usual fruitless discussion from the liberal standpoint of something anti-liberal. The reader will probably think, " But all that we have read about is indoctrination ! " It is. It is intended to be so. It is not meant to have anything in common with a liberal education. A liberal education, indeed, is regarded with horror. If it is considered, further, that the psychological effect of controlled instruction will be to weary young people and make them resist, it can only be said that we must wait and see. That many resist indoctrination in present-day Germany is true, that a still larger number do not is equally true. To condemn indoctrination is not to make it disappear. Indoctrination has, all things considered, been eminently successful in Soviet Russia. Germany may be a very different country—but how many countries would be able to resist indoctrination systematically and relentlessly carried out ?

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RÉSUMÉ.

DES ASPECTS PSYCHOLOGIQUES ET AUTRES DES TENDANCES RÉCENTES DANS L'EDUCATION EN ALLEMAGNE.

Cet article commence par une esquisse du système d'éducation en Allemagne, avant la guerre, pendant l'époque d'après guerre et depuis la révolution nationale-socialiste. L'auteur fait remarquer les différences entre les trois systèmes de philosophie, très peu semblables. Avant de traiter les sections les plus importantes du système d'éducation actuel, il explique les idées de Adolf Hitler sur l'éducation, en appuyant sur le côté physique et sur le développement du caractère. Là-dessus suit une description assez détaillée des innovations, telles "Arbeitsdienst," "Landjahr" et "Staatsjugendtag." Ensuite l'article s'occupe des types importants de l'école d'après guerre, par exemple "Aufbauschule" et "Deutsche Oberschule," et décrit, avec assez de détail, la "Nationalpolitisch Erziehungsanstalt," quelquechose de tout à fait nouveau.

Quoique l'auteur cite fréquemment des détails des cours, il s'occupe surtout de l'esprit des tendances nouvelles, et, partout où cela est possible, il s'efforce de mettre en lumière et d'expliquer la base des idéals nouveaux.

ZUSAMMENFASSUNG.

PSYCHOLOGISCHE UND ANDERE SEITEN DER NEUEREN ERZIEHUNG IM DEUTSCHEN REICH.

Dieser Artikel beginnt mit einem ganz kurzen Überblick über das deutsche Unterrichtswesen vor dem Weltkrieg, in der Nachkriegsepoche, und seit der Nationalsozialistischen Revolution. Der Verf. weist auf die Unterschiede zwischen den drei ganz verschiedenen Weltanschauungen hin. Ehe die bedeutendsten. Teile

der heutigen Erziehung im Nationalsozialistischen Staat besprochen werden, erläutert der Verf. Adolf Hitlers Gedanken zum Unterricht, wobei die körperliche Seite und Charakterbildung stark hervorgehoben werden. Es folgt dann eine ziemlich ausführliche Beschreibung von Neuschöpfungen wie z. B. Arbeitsdienst, Landjahr, und Staatsjugendtag. Nachher berichtet der Verf. über wichtige Nachkriegsschultypen wie z. B. Aufbauschule und Deutsche Oberschule, und er beschreibt mehr oder minder eingehend die sehr neue Nationalpolitische Erziehungsanstalt.

Obgleich der Verf. manchmal Einzelheiten des Lehrplans erwähnt, schreibt er hauptsächlich über den Geist der neuen Richtungen und womöglich versucht er die den neuen Idealen zugrunde liegende Basis zu betonen und zu erläutern.

AN INVESTIGATION OF THE ATTITUDE OF TRAINING COLLEGE STUDENTS TOWARDS THE IMPORTANCE OF GOOD SPEECH.

By C. C. BELL.

I.—*The object of the investigation.*
II.—*The form of the investigation.*
III.—*Persons concerned in the investigation.*
IV.—*Results of the investigation.*
V.—*Summary of conclusions.*
VI.—*Appendix.*

I.—The object of the investigation.

The object of the investigation was to discover the attitude of mind of students intending to become teachers in secondary schools towards the importance of good speech. It was felt that information on this subject might make it possible to plan the speech training syllabus in training colleges and departments upon a sounder basis than is at present possible. During the one-year professional course for a diploma in education only a very little time can be devoted to speech training, and it is the opinion of the investigator that much of this time is often wasted, owing to methods of approach on the part of the teacher which do not take enough into account shyness, apathy, or even antagonism, on the part of the student. It is not uncommon to find that students regard speech training either frivolously, as a mere waste of time, or resentfully, as a criticism of their social status. It is often necessary to spend a long time breaking down this resistance before any improvement in speech can be brought about. To ignore this resistance and assume willingness to co-operate on the part of the student is, in the opinion of the investigator, generally useless.

The details of the investigation have therefore been concerned with the attempt to discover

(*a*) to what extent emotional feelings (such as snobbery, inferiority, antagonism) are roused in students by *first*, bad speech in themselves and others, and *secondly*, criticism and correction of their own speech by others;

(*b*) whether there is any substantial difference between the personal and professional attitudes of mind towards problems affecting good speech ;

(*c*) whether, on certain matters of verifiable fact rather than opinion concerning good speech, the statements of students are reliable:

(*d*) whether certain natural abilities or educational influences in earlier life may be considered to be a predisposing factor towards *first*, good speech, and *secondly*, adaptability in speech.[1]

II.—The form of the investigation.

The investigation took the form of:

(1) *A questionnaire*, submitted to the students in Group A (described below, page 147).

(2) *A checking test*, submitted to certain volunteer students from Group A.

(3) *A report on a group of case studies*, certain individual students from Group A.

(4) *A consideration* of special abilities and early educational influences as possible factors of good speech and adaptability in speech.

(1) The questionnaire.

The questionnaire was intended to elicit *in the first place* the point of view of students in Group A on certain problems connected with good speech, and *in the second place* a statement of fact regarding questions 13, 21, and 26 of the questionnaire, which could be verified by the checking test (2, above), and the report on case studies (3, above).

The questionnaire, which is given in full below, falls into four parts, seeking to discover *first*, certain relevant facts of the student's past history; *secondly*, his personal and professional attitude towards good speech in others; *thirdly*, his attitude towards his own mode of speech; and *fourthly*, his attitude towards and comments on the questionnaire.

Method of Using the Questionnaire.

The questionnaire was submitted to the group in such a way as to ensure as far as possible that the statements made should represent the student's own considered points of view, untouched by the influence of the opinions and criticisms of speech training experts, or of discussion and collaboration among themselves.

Questionnaire on speech training.

Part I.

(1) Name of Student. (2) Training College or Department.

(3) Age (*years and months*).

[1] As shown in an ability to profit from criticism and correction of faults of speech.

(4) Particulars of Education.

Schools and Colleges. Dates. Type of Institution (Elementary, Private, Boarding Preparatory, County Secondary, Grammar, Endowed Foundation, Public, etc.)

(5) Place or places of residence (*with dates*). (6) Occupation of father.

(7) Nationality and chief place of residence of father. (8) Occupation of mother (if any) before marriage.

(9) Nationality (before marriage) of mother, and chief place of residence.

(10) Have you a good ear for music, or a moderately good ear for music, or almost no ear for music? Are you tone deaf?

(11) Can you speak any foreign language or languages with fair fluency?

(12) Have you at any time spoken a distinctive local dialect? (*Name locality.*)

(13) Has your present normal English speech any dialectal characteristics?

(14) Are you glad, sorry, or indifferent that this is the case?

(15) Have you been encouraged at home or at school to take a pride in speaking a local dialect?

(16) Were you, at school, given any instruction in speech training? (*a*) Elocution, verse-speaking? (*b*) Accent and faulty speech correction?

(17) Have you been encouraged at home or at school to take a pride in good speech?

Throughout this questionnaire, speech is referred to in four connections:

(*a*) *Inaudibility* (*e.g. huskiness, falling away at the end of a sentence, feebleness, lack of vigour, etc.*).

(*b*) *Faulty Pronunciation* (*e.g., uneducated, vulgar speech, marked cockney or provincial accent, etc.*).

(*c*) *Ugly Speech* (*e.g., harsh, shrill, bleating, pedantic, etc.*).

(*d*) *Physically Defective Speech* (*e.g., nasal speech, inability to pronounce r, s, th, etc.*).

You are asked to answer the following questions with reference to the divisions (*a*), (*b*), (*c*) *and* (*d*), *which immediately follow the questions and refer to the classifications of speech given above.*

PART II.

(18) Which of the four types of bad speech do you consider worst in a teacher? (*Arrange the four types in order of badness.*)

[1](19) Do you think heads of schools or education authorities ought to appoint teachers who speak badly, if they are in other respects satisfactory?

a b c d

[1] Questions 19 to 33 inclusive should be answered, if possible, by "Yes" or "No" with reference to each of the four sections (a), (b), (c), and (d).

(20) If you were short-listed for a post with someone whose speech was better than your own, would you consider it fair (other qualifications being equal) that the other candidate should be appointed *for that reason*?

a b c d

(21) Do you notice the way other people speak?

a b c d

(22) Have you any partialities or prejudices as to speech which are not dispelled by intellectual conviction?

a b c d

(23) Do you consider it important that all educated persons should speak well?

a b c d

(24) Do you consider anyone really well educated if he or she does not speak well?

a b c d

PART III.

(25) Do you regard matters of speech without emotional feeling of any kind? (shame, snobbery, etc.)

a b c d

(26) Are you satisfied with your own speech?

a b c d

(27) Do you feel secretly superior to people who speak badly?

a b c d

(28) Do you feel secretly inferior to people who speak better than yourself?

a b c d

(29) If you were told by a competent critic that your speech was bad, would you believe it?

a b c d

(30) If your speech is bad, do you wish to be told or prefer to be left in ignorance?

a b c d

(31) If you believed that your speech could be improved, would you wish to improve it?

a b c d

(32) If you believed that your speech could be improved, would you take considerable trouble to improve it?

a b c d

(33) Is it beneath your dignity to correct your mode of speech?

a b c d

(34) With which of the four types of bad speech would you most dislike to be affected? (*Arrange in order of dislike.*)

(35) Would you rather speak badly or have a bad handwriting? (*Answer "Speak" or "Write."*)

a b c d

(36) Would you rather be told that you speak badly or have a bad handwriting? (*Answer "Speak" or "Write."*)

a b c d

(37) Would you rather speak badly or dress badly? (*i.e.*, in a careless, slovenly, unsuitable way, apart from considerations of fashions or smartness). (*Answer "Speak" or "Dress."*)

a b c d

(38) Would you rather be told that you speak badly or dress badly? (*Answer "Speak" or "Dress."*)

a b c d

PART IV.

(39) Are there any matters in this questionnaire which you have never considered before? (*Give numbers of the questions concerned.*)

(40) Do you mind answering any of the questions? (*Give numbers of questions concerned, and reasons, if possible.*)

(41) Do you answer the questions easily, or tend to quibble? (*Give numbers of the questions concerned.*)

Please add below any comment on the questions or your answers which will serve to clear up any difficulty or ambiguity.

Note of the Divisions a, b, c, and d, in the Questionnaire.

In the light of certain objections to, and criticisms of the categorical division of speech adopted for the purposes of the questionnaire, it has been considered desirable to add a note on the reasons underlying it.

As the questions were to be answered by persons in whom no knowledge of the technicalities of speech could be presupposed, it was thought better to avoid any strictly phonetic descriptions or definitions of speech characteristics, and to base the division rather upon types of speech readily associated together as evoking certain characteristic psychological reactions in the listener.

Division "a" was intended to include all tendencies to inaudibility such as cause a listener to have to strain merely to hear what is said.

Division "b" was intended to comprise all forms of speech that lack culture. The objection has been made that "provincial accent" is not

the same as vulgar speech. The investigator is still of opinion, after careful consideration of these objections, that nowadays to speak with a " marked " provincial accent does show a lack of culture. This does not, however, exclude from the ranks of educated persons those whose speech in some way reveals the region of their origin. Standard English, as the result of the spread of education, is not yet an accomplished fact, but there is a recognisable approximation to a standard speech used by all who lay any serious claim to culture. The object of this division was to explore the attitude towards cultural distinctions which has for so long been based on social class.

Division " c " was intended to include all types of speech which give æsthetic offence. This principle underlies the apparently diverse examples chosen.

Division " d " was intended to cover such defective speech as entails an inability, without special corrective and constructive exercises, to form particular speech sounds. This differs from " faulty pronunciation," (Division " b "), in that the latter does not involve an inability to pronounce a given sound, but merely the use of another given sound in its place, the " correct " sound being within the range of the speaker's powers. It will be noticed that the examples given of the type of speech defects to be considered in Division " d " were all such as are generally amenable to curative treatment by speech training exercises. (Such defects as adenoidal or cleft palate speech, and stammering, which usually need treatment by a surgeon and a psychologist respectively, were purposely omitted.) This does not appear to have obviated a widespread misconception that Division " d " defects are incurable.

(2) The checking test.

The checking test was intended to corroborate or deny the statements made by Group A in answer to Questions 13, 21, and 26 of the questionnaire.

Question 13.—Has your present normal English speech any dialectal characteristics?

Question 21.—Do you notice the way other people speak?

Question 26.—Are you satisfied with your own speech?

Questions 13 and 21 involve matters of fact; and, while Question 26 may be said to be a matter of opinion rather than of fact, it was felt desirable to find out whether such satisfaction as was felt was in fact justified by the standard of speech attained.

Method of Using the Checking Test.

Thirteen students (chosen by the investigator to represent certain modes of speech) read aloud in turn a given prose passage, while twenty-five volunteer students (not specially chosen) recorded their impressions of the various readings on a form provided for the purpose. The readers were placed so that they were invisible to the listeners, in order that no previous acquaintance with the readers, nor any force of personality or facial expression, should be allowed to influence the impression derived from simply listening to the passage read aloud.

A phonetic expert, who was kind enough to give her services, also recorded her impression of the reading, and it was upon the testimony of this expert that the marking of the checking test was based.

The listeners received the following instructions: Please mark each reader 0, 1, 2, or 3, for each of the following characteristics:

0=absence of the characteristic;
1=presence in a small degree;
2=presence in a more marked degree;
3=presence in a very marked degree.

Speech characteristics were designated as follows: (1) Inaudibility; (2) "Oxford" accent; (3) Cockney accent; (4) Other dialectal characteristics (give some indication of region of origin, if possible); (5) Monotonous speech (i.e., dull, level, flat uninteresting tone); (6) Lisp; (7) Stammer; (8) Any other noticeable characteristics not included in the foregoing categories.

The checking test was used in conjunction with the questionnaire as follows:

(1) The impressions recorded by the twenty-five students who listened were scored by comparison with the opinion of the expert, and the measure of ability to observe the characteristics of other people's speech was compared with these students' answers to Question 21—"Do you notice the way other people speak?"—as a verification of the reliability of their answers to this question.

(2) The expert's opinion of the speech of the thirteen students who read aloud was compared with their own answers to Questions 13 and 26 (Divisions a, c, and d)[1] as a verification of their own answers to these questions. The case study reports of the speech of forty individual students were similarly compared with the answers of these forty students to Questions 13 and 26 (Divisions a, c, and d) and the reliability of the answers of the two groups (13+40 students) was computed together.

[1] No record is here given of the answers to this question as regards Division "b." There is no reason to assume any cause for satisfaction or dissatisfaction with the presence or absence of dialectal characteristics in speech.

(3) THE REPORT OF CASE STUDIES.

The report of case studies was intended to supplement the checking test in corroborating or denying the answers given to Questions 13 and 26 of the questionnaire.

The case studies were of *first*, certain students from Group A whose speech was, in the opinion of the investigator, good enough in all respects to need no corrective attention, and *secondly*, certain students from Group A, with whom the investigator came into contact in individual tutorial classes in speech correction during the early part of the session 1933-34. The classification of these students' faults of speech, and the assessment of their adaptability in correcting them, is therefore based upon the personal opinion of the investigator.

The report of case studies was used in conjunction with the questionnaire as follows :

The reports of the speech of the forty students were compared with their answers to Questions 13 and 26 (Divisions a, c, and d) and the reliability of these answers was computed together with that of the answers of the thirteen students who read aloud in the checking test.

(4) THE INVESTIGATION OF SPECIAL ABILITIES AND EARLY INFLUENCES.

The answers to Questions 10, 11, 16, and 17 of the questionnaire given by the students who formed the material of the case study reports, were compared with their attainments in (*a*) good speech, and (*b*) adaptability in speech.

(*a*) The twenty students whose speech needed no correction were classed as " good," and the twenty whose speech had needed correction in tutorial classes were classed as " bad " speakers.

(*b*) The twenty " bad " speakers were classed, according to their progress in tutorial classes, as " adaptable " or " unadaptable."

By means of Yule's Coefficient of Colligation, the correspondence of the two special abilities, (1) a good ear for music, (2) fluency in foreign languages, and the two educational influences, (3) instruction in speech training, and (4) encouragement of good speech at home and at school, with (*a*) good speech and (*b*) adaptability in speech, was calculated.

III.—PERSONS CONCERNED IN THE INVESTIGATION.

The persons concerned in the investigation were :

A.—200 students, members of the University of London, at the Education Department of King's College, and the Institute of Education, for the session 1933-34.

B.—Twenty-six teachers in secondary schools, all of whom had not less than two years' teaching experience.

C.—An expert phonetician, a member of the staff of the Phonetics Department at University College, London.

The students in Group A answered the questionnaire, and certain members of this group were the subjects of the checking test and case study reports. The teachers answered certain parts of the questionnaire, and their answers were used in comparison with those of Group A. The expert phonetician attended the checking test, and by her valuable assistance made it possible to provide a standard by which to assess the value of the students' impressions recorded in the test.

Details of Group A.

The median age of the whole group of 200 students was 22 years and 1 month, and the interquartile range of age 1 year and 5 months. The sexes were almost equally represented; the students were, with a few exceptions, university graduates, and their previous education represented very adequately the various types of English schools and universities. About half the group were Londoners, while most other parts of Great Britain were represented. The occupations of their parents covered a wide intellectual and social field. The large majority of the group had been " encouraged to take a pride in good speech " at home and at school, though in the light of the results of the investigation it is suggested that such encouragement must often have been based upon a somewhat hazy notion of what constitutes good speech. Nearly half of the group had received some instruction in speech training at school, either in elocution and verse speaking or in accent and faulty speech correction. This work would appear to receive much more attention in girls' than in boys' schools, especially in the form of elocution and verse speaking. Very few of the students said that they had ever spoken a distinctive local dialect, and of these only one had ever been encouraged to take a pride in doing so. This statement would suggest either that dialect speakers are not " speech conscious," and are unaware of the difference of their own speech from other people's, or that dialect speakers take no pride in their local dialect, and would prefer their children and pupils to speak Standard English. A somewhat larger number considered that their present mode of speech showed traces of local dialect; in general these regretted the fact. Of those who claimed to speak without dialectal characteristics, a large majority was glad of the fact.

The Thirteen Students Chosen to Read in the Checking Test.

This group was chosen to include as many different speech characteristics as possible. They read with varying degrees of audibility, included

six widely different types of regional and class dialects, attained very varying degrees of flexibility and range of tone, included three minor physical defects of speech, and a few less readily classified peculiarities of speech.

The Twenty "Bad" Speakers who formed the Material of the Case Study Reports.

Of this group, 5 had defects of division "a" type;
20 ,, ,, ,, "b" ,,
5 ,, ,, ,, "c" ,,
0 ,, ,, ,, "d" ,,

Nine had made good progress, 5 had made moderate progress, and 6 had made poor progress in correction of these defects.

IV.—Results of the Investigation.

The general trend of the answers to the questionnaire and the final results of the checking by means of the test and case study reports are given here, without detailed reference to numerical calculations.

(1) The Questionnaire.

(i) *Attitude towards other people's speech.* (Compiled from the answers given to Questions 21, 23 and 24.)

(1) The students are almost universally confident in their own powers of observation concerning other people's speech.

(2) There is a widespread feeling for the importance of good speech among educated persons, though this view is not so widely held as to "d" defects.

(3) Good speech is not widely regarded as an *essential* of good education, except as regards Division "b." Opinion is almost equally divided as to Division "c."

(ii) *Attitude towards good speech in teachers.* (Compiled from the answers given to Questions 18, 19, 20 and 34.)

(1) There is a considerable difference between the professional and personal points of view of Group A towards good speech. Few students rate the defects in the same order considered personally as considered professionally.

(2) "a" defects are regarded as the worst type in a teacher, and as least undesirable personally.

(3) "b" defects are most to be disliked personally, and nearly as many students consider this type of defect the worst in a teacher.

(iii) *Attitude towards their own mode of speech.* (Compiled from the answers given to Questions 25, 26, 27, 28, 29 to 33 and 35 to 38.)

(1) Except as regards " a " defects, to which these students have probably given little previous attention, there is a fairly widespread satisfaction on the part of students with their own speech, though quite a large number of indefinite or ambiguous answers are recorded.

(2) So many students claim to regard matters of speech with emotional feeling, especially with regard to " b " and " c " defects, that it would appear highly important to bear this fact in mind when designing corrective work in speech training.

(3) There is no close correspondence on the whole between a feeling of superiority over people who speak badly and a feeling of inferiority towards better speakers than themselves. Such a correspondence prevails only with reference to " a " defects, as to which in their own speech students did not seem very well satisfied. Satisfaction with one's own speech would seem to preclude a feeling of inferiority to others.

(4) Willingness to believe adverse criticism of their own speech seems to be bound up, to a certain extent, with questions of professional importance, emotional feeling, self-satisfaction, and personal likes and dislikes in the matter of speech.

(5) There is a widespread preference for being informed of defects of speech, rather than being left in ignorance, a widespread desire to improve defects of speech, and an almost equal willingness to take considerable trouble in doing so. Students almost unanimously deny that it is beneath their dignity to correct their mode of speech.

(6) Students would, on the whole, rather write and dress badly and have their handwriting and dress adversely criticised, than speak badly or have their speech adversely criticised. A good handwriting is ranked as of less importance than dressing well. Women students tend to ascribe more importance to dress than men students.

(iv) *Comment on and attitude towards the investigation.* (Compiled from the answers given to Questions 39 to 41, and from the general comment made upon the Questionnaire.)

(1) The comment and criticism was, with negligible exceptions, sensible and constructive, though a few individual answers may have been invalidated by misunderstanding of a question or ignorance of facts.

(2) Most of the questions had already been considered by a large proportion of the group.

(3) The number of students who minded answering the questions was so small as to be negligible.

(4) While there was little tendency to quibble in answering the questions, a small proportion of the group did not find them easy to answer.

(2) THE CHECKING TEST AND (3) A REPORT ON A SERIES OF CASE STUDIES.

The checking test and case study reports were used, as described above, to corroborate or deny the answers given to the following questions:

Question 21.—Do you notice the way other people speak ?[1]

Question 13.—Has your present normal English speech any dialectal characteristics ?

Question 26.—Are you satisfied with your own speech ?

The total number of students whose statements in the questionnaire were verified by the checking test and case study reports was 78, comprising :

(1) The 25 students who recorded their impressions of the reading in the checking test (volunteer students, not specially chosen).

(2) The 13 students who read in the checking test (specially chosen to represent a variety of speech characteristics), and

(3) The 40 students who furnished material for the case study reports (chosen, 20 to illustrate *good*, and 20 to illustrate various forms of *bad* speech).

These numbers, representing 39 per cent. of the whole group of students, would appear to furnish adequate sampling on which to base conclusions as to the abilities of the whole of Group A.

It may therefore be inferred from these results that :

(1) Little reliance can be placed upon students' claims to notice other people's speech. " b " defects are noticed more than others.

(2) A high general degree of reliability is to be found in the students' satisfaction with their own speech, as regards æsthetically pleasing speech and physical defects, and a lower but nevertheless appreciable degree of reliability as regards their awareness of dialectal characteristics in their own speech. On their satisfaction or dissatisfaction with their own audibility, little reliance can be placed.

(3) In every division, but especially as regards " b " and " d " defects, good speakers show a higher degree of reliability than bad speakers in their statements about their own speech and their satisfaction or dissatisfaction with it.

[1] A study of the details of the scores in the checking test shows how certain students, who score high marks for observation of abnormalities of speech, are unreliable in observing normalities, and lose many marks for attributing abnormalities to normal speech. Others are misled in the opposite direction and, while they observe normal speech with some accuracy, tend not to notice abnormalities where they occur.

(4) THE INVESTIGATION OF SPECIAL ABILITIES AND EARLY EDUCATIONAL INFLUENCES.

(1) *Ear for Music.*—While a good ear for music is not found to any considerable extent as an accompaniment of good speech, adaptable speakers all have a good ear for music.

(2) *Fluency in Foreign Languages.*—The results here are inconclusive. (It should be pointed out that students are not likely to have given very reliable answers to this question, as opinions differ widely as to what constitutes fluency in a foreign language.)

(3) *Previous Instruction in Speech Training.*—Previous instruction in speech training, while it does not correspond to any considerable extent with good speech, has apparently a marked tendency to prevent adaptability. This result would appear to be of considerable significance. If speech training is effective in inculcating permanent habits of speech, it is of the greatest importance that the training given should be based upon sound phonetic principles. It is, on the other hand, possible that instruction in speech training tends to promote a self-satisfaction which makes for inadaptability rather than to inculcate unalterable habits of speech. The necessity for sound instruction is no less important in this case.

(4) *Encouragement of Good Speech at Home and at School.*—The results here are somewhat inconclusive, though the slight tendency for encouragement of good speech to be associated with lack of adaptability suggests that the encouragement given may perhaps have partaken of the nature of undue satisfaction rather than of a desire to improve speech.

V.—SUMMARY OF CONCLUSIONS.

(*a*) (1) I. *Other people's speech.*

While a very large proportion of the students declare that they notice other people's speech, it has been shown that they are in fact very unreliable in their observations. Social standards of speech are accepted more widely than any others as the criterion of a good education.

(*a*) (1) II. *Their own speech.*

A large proportion of students have emotional feelings on the subject of speech, and feel secretly superior to people who speak badly, where social (and, to a smaller extent, æsthetic) standards are in question. In view of the prevalence among these students of speech that would not be generally regarded as socially acceptable, it is interesting to note that a large proportion are well satisfied with their own speech from this point of view, and that this type of bad speech is the one with which the greatest number would personally most dislike to be affected.

(*a*) (2) *Criticism of their own speech by others.*

There is a widespread expression of a desire to be informed of hypothetical faults of speech (see Questions 30, 31 and 32), and of a closely corresponding desire to improve such bad speech, even at the expense of considerable trouble; but the number of students willing to believe in the actual existence of such faults falls considerably lower.

(*b*) *Personal and professional standards.*

The difference between the personal and professional attitude towards speech problems is to be seen in the varying degrees of importance attached to particular aspects of speech professionally and personally. Only in the matter of socially acceptable speech is there a very close correspondence of opinion.

(*c*) *Reliability of students' statements.*

Little reliance can be placed upon the students' claims to notice other people's speech. A considerable measure of reliance can be placed upon their claims to satisfaction or dissatisfaction with their own speech as regards physical defects and æsthetically pleasing speech, and to a lesser degree upon their awareness of dialectal characteristics in their own speech. Little reliance can be placed upon their satisfaction or dissatisfaction with their own audibility.

Good speakers show a higher degree of reliability than bad speakers in their assessment of their own speech, their knowledge of their own merits being particularly reliable with regard to those very matters (i.e., socially acceptable speech and physical defects) as to which the bad speakers are least reliable.

(*d*) *Special abilities and educational influences.*

No very definite conclusions were reached from this investitgation. The association of previous instruction in speech training with lack of adaptability in speech suggests the importance of a sound basis for all work in speech training.

General Comment.

The general tendency which has been observed throughout the investigation towards high feeling and unanimity of opinion[1] upon those aspects of speech which are connected with social standards, would

[1] While there was a considerable degree of high feeling and unanimity of opinion in the matter of physical defects also, its significance must be discounted to a great extent, because (1) such physical defects as are found among Group A are very few and very slight, and (2) a widespread misconception has been discovered among the students to the effect that physical defects are incurable.

appear to be of the greatest significance for those concerned with speech training for students whose age, education and social background are similar to those of Group A. In view of the prevalence of "social" defects over other types of bad speech among these students, considerable interest may attach to the fact that a relatively large number of students not only dislike "social" defects more than other types of bad speech, and feel superior to people who speak badly in this respect, but have also a high feeling of satisfaction with their own speech considered from this point of view. It would be worth while exploring the matter further, in order to discover whether the satisfaction expressed is in fact a kind of "compensation" for socially unacceptable speech. The suggestion is supported by the fact that the disparity between the reliability of good and bad speakers' assessments of their own speech is most marked with regard to "social" defects.

It would appear that some degree of "speech consciousness" (of the speaker's own mode of speech) is one of the normal accompaniments of good speech, though it is not to be hastily assumed that the one is caused by the other. It would further appear that "speech consciousness" (of other people's mode of speech) is for the most part undeveloped among persons of the age, education and experience of the students examined.

VI.—APPENDIX.

COMPARISON OF THE ATTITUDE OF GROUP A WITH THAT OF EXPERIENCED TEACHERS.

An investigation was made of the answers given to certain questions in the questionnaire by a group of teachers in secondary schools (Group B). Their answers were compared with those of Group A, in order to discover whether there was any notable difference between the attitude of mind towards speech problems of experienced teachers and that of students intending to enter the teaching profession.

These teachers, twenty-six in number, varied in the length of their teaching experience from two to thirty years. The median number of years was found to be ten, and the interquartile range 10·5 years. The schools in which they were at that time employed showed a wide range of type, including those under the management of local education authorities, school foundations, trusts or companies; private schools, recognised and unrecognised; a technical school, and a Scottish academy The county secondary schools were unfortunately rather inadequately represented.

It may be that the number of teachers questioned was too small to provide an adequate sampling (26 as compared with 200 students), but there was little difference on the whole between their opinions and those of Group A.

They were invited to answer Questions 12, 13, 14, 18, 19, 20, 21, 23, 24, 25, 26, 33 and 34. There were few differences in their answers that could be regarded as significant; the main points of interest are enumerated below:

Question 18.—*Which of the four types of bad speech do you consider worst in a teacher?*

Group B rates æsthetically pleasing speech as of greater importance than does Group A, and does not attach such importance to educated speech, free from vulgarisms and regional accent, as does Group A. The two groups agree in rating audible speech as of highest importance in a teacher.

Question 34.—*With which of the four types of bad speech would you most dislike to be affected?*

From the personal point of view, Group B considers "c" defects worst, and "d" defects next in order of demerit; "b" defects (which Group A disliked most from the personal point of view) are given third place. The two groups agree in rating "a" defects as least to be disliked personally.

Questions 19 *and* 20.—*Do you think heads of schools or education authorities ought to appoint teachers who speak badly, if they are in other respects satisfactory? If you were short-listed for a post with someone whose speech was better than your own, would you consider it fair (other qualifications being equal) that the other candidate should be appointed for that reason?*

The general trend of Group B's answers to these questions was similar to that of Group A, though there was far greater unanimity among the teachers than among the students that heads of schools and education authorities should not appoint bad speakers as teachers, and that they would consider it fair that better speakers than themselves should be appointed to posts. (Whereas the students, in answering Question 19, expressed the view that speakers with "d" defects ought to be appointed as teachers, Group B on the whole dissents from such an opinion.) There were considerably fewer doubtful answers to these questions from Group B.

Question 26.—*Are you satisfied with your own speech?*

There was a higher degree of satisfaction with their own speech among the teachers than among the students, especially, (as might be expected of practised teachers), with reference to "a" defects.

It would appear from these results that experience of teaching over a number of years tends to strengthen and confirm earlier opinions on the subject of speech, rather than to reverse them. The investigator would add, however, that evidence in support of such a thesis is somewhat scanty, and that to reach more definite conclusions this part of the investigation should be repeated in such a way that (1) Group B represents a larger body of opinion, and (2) a larger number of county secondary schools is included.

RÉSUMÉ.

DE L'OPINION DES NORMALIENS SUR L'IMPORTANCE D'UNE BONNE DICTION.

On examina l'opinion des normaliens quant à l'importance d'une bonne diction. On considéra les questions suivantes :

[1] Quelles émotions sont soulevées chez les étudiants par une mauvaise diction ?

[2] La différence entre l'attitude personnelle et l'attitude professionnelle quant aux problèmes de la diction.

[3] La question si l'on peut se fier aux affirmations des étudiants en ce qui concerne la diction.

[4] L'effet de certaines aptitudes ou des influences pédagogiques de l'enfance en encourageant une bonne diction ou la facilité de s'adapter en matière de diction.

Les résultats démontrent qu'il existe une prépondérance de forte émotion réliée à certains aspects d'une bonne diction, et que l'attitude professionnelle envers cette question diffère largement de la personnelle. La validité des réponses à des questions de faits se laissant constater était beaucoup plus haute chez les étudiants ayant eux-mêmes une bonne diction que chez ceux dont la diction était mauvaise. Il n'y avait aucun témoignage définitif quant à l'influence sur la diction d'une oreille juste, d'une facilité à parler les langues étrangères, et de la cultivation antérieure d'une bonne diction ou des leçons de diction.

ZUSAMMENFASSUNG.

EINE UNTERSUCHUNG DER EINSTELLUNG VON STUDIERENDEN AN LEHRERBILDUNGSANSTALTEN IN BEZUG AUF DIE WICHTIGKEIT GUTER REDE.

Die Einstellung von Studenten an Lehrerbildungstalten in Bezug auf die Wichtigkeit guter Rede wurde untersucht. Die folgenden Punkte wurden betrachet:

[1] Welche Gefühle werden bei Studenten durch schlechte Rede hervorgerufen.

[2] Der Unterschied zwischen der persönlichen und beruflichen Einstellung gegen Sprechprobleme.

[3] Ob Feststellungen von Studenten über Dinge, die mit Reden verbunden sind, zuverlässig sind.

[4] Die Wirkung von gewissen Fähigkeiten oder frühen erzieherischen Einflüssen auf die Förderung guter Rede oder die Anpassungsfähigkeit im Reden.

Die Ergebnisse zeigen, dass starke Gemütsbewegungen, verbunden mit gewissen Seiten guter Rede, überwiegen und dass die berufliche Einstellung gegen gute Rede beträchtlich von der persönlichen abweicht. Die Zuverlässigkeit von Antworten, die auf Fragen über feststellbare Tatsachen gegeben wurden, war viel grösser bei Studenten, deren Rede keine Berichtigung erforderte, als bei denen, deren Rede fehlèrhaft war. Es gas keinen klaren Beweis, dass musikalisches Gehör, Geläufigkeit in fremden Sprachen und vorherige Pflege guter Rede oder Unterricht im Sprechen besonderen Einfluss auf die Rede haben.

THE RELATIVE POPULARITY OF SECONDARY SCHOOL SUBJECTS AT VARIOUS AGES.

By R. A. PRITCHARD
(*From the Education Department, University of Birmingham*).

I.—*Object of the enquiry.*
II.—*Scope and method of the main investigation.*
III.—*The computation of replies and resulting order of preferences.*
IV.—*Reasons for liking or disliking subjects.*

I.—Object of the enquiry.

The object of the investigation here recorded is to throw additional light upon the problem of the curriculum.

The enquiry seeks to find out and bring into prominence the preferences and feelings of the pupils themselves with regard to the subjects taught in the secondary schools.

It is not suggested that these feelings and opinions should determine the make-up of the curriculum, but they should at least be known, and up to the present there have been few attempts, on a large scale, to find out what they are.

As far as can be ascertained, two investigations only of this nature have been reported in educational periodicals during recent years.

Dr. E. O. Lewis conducted an enquiry amongst elementary school children, and contributed an article entitled "Popular and Unpopular School Subjects" to the *Journal of Experimental Pedagogy* for June, 1913. Some years later Mr. John Don and Mr. James Grigor made an investigation amongst pupils in the West of Scotland. Their results were published in the *Journal of Experimental Pedagogy* for March, 1922.

Neither of these investigations can be closely compared with the one here recorded, as that of Dr. E. O. Lewis was concerned with elementary school children and that of Messrs. John Don and James Grigor was confined to five subjects and referred only to one school stage.

Many objections may be advanced to an investigation of this nature. In particular, it may be alleged that there are so many factors contributing to the choice of subject that the results gained are not a reliable indication of the feelings of the pupils towards the subjects themselves. The popularity of the teacher, the effectiveness of the teaching, and the natural aptitude of the child, are a few of the factors determining preference.

Whilst it may be admitted that these factors might invalidate the results, if the investigation were conducted over a small area, it may reasonably be assumed that they will neutralize each other when the electorate is as large as eight thousand.

Two supplementary investigations were carried out in order to test the relative strength of the above-mentioned influences.

In certain schools the pupils were asked to write down an answer to the following two questions :

(1) Have you put down as your best-liked subject, a subject which is taught by the teacher you like best ?

(2) Have you put down as your least-liked subject, a subject which is taught by the teacher you like least ?

In answer to the first question, 249 pupils gave the answer " yes," and 714 gave the answer " no."

In answer to the second question, 146 pupils gave the reply " yes " and 828 the reply " no."

This result, it will be seen, is emphatically against the opinion that the popularity or unpopularity of the teacher is the main influence, especially when it is considered that the answer " yes " does not necessarily mean that the popularity or unpopularity definitely influenced the choice. The nature of the subject may have contributed to the decision even in the cases where the affirmative answer was given.

The other supplementary investigation was conducted by questionnaire amongst college students under training in the Education Departments of universities, who were asked to supply answers in relation to two enquiries.

(*a*) In the first, the liking for the teacher, the effectiveness of the teaching, the nature of the subject, and aptitude for the subject were suggested as factors contributing to preference. The students were asked to cross out the factors that did not affect their choice, and to put the figures, 1, 2, 3, 4 (as requisite) alongside the others in the order in which they operated in favour of their best-liked subject.

Out of 228 students voting, eighteen put the liking for the teacher first, twenty-four the effectiveness of the teaching, fifty-five their aptitude for the subject, and 131 the nature of the subject.

(*b*) The voting was, however, much closer with regard to dislike of the subject, in which case, the factors suggested were—aversion to the teacher, the ineffectiveness of the teaching, the nature of the subject, and inaptitude on the part of the pupil.

Out of 222 students voting, thirty-three put aversion to the teacher as the most prominent factor affecting choice, forty-three put the ineffectiveness of the teaching first, sixty-five the nature of the subject, and eighty-one their inaptitude for the subject.

II.—SCOPE AND METHOD OF THE MAIN INVESTIGATION.

The main enquiry was conducted by questionnaire submitted by the kindness of head masters and head mistresses, to forty-seven schools. The schools were especially selected as schools where the teaching was likely to be good, as indicated by personal knowledge and successful results in the Northern Universities Matriculation Examination. Thus the subjects had the best chance possible of being voted on under fair conditions.

The number of boys' schools taking part in the investigation was twenty-one, the number of girls' schools sixteen, and the number of mixed schools, ten.

In all, 8,273 replies were received—3,834 from boys in boys' schools, 3,108 from girls in girls' schools, 747 from boys in mixed schools, and 584 from girls in mixed schools.

The questionnaire which was submitted to the scholars asked for their age in years and months, but not their names, and contained a list of subjects: English, French, Latin, History, Arithmetic, Geometry, Algebra, Geography, Physics, Chemistry, and Botany. Below this list and the voting spaces were the following instructions, which are printed here as they appeared on the form:

> First, cross out the subjects you do not take, then put the figure 1 opposite the subject you like best, the figure 2 opposite the subject you like second best and so on until you have put all the subjects you take in order of preference.
>
> TRY TO THINK OF EACH SUBJECT AS A SUBJECT *and do not take into account your feeling for the master or mistress who teaches it.*
>
> Be perfectly frank. Your paper will not be seen or marked by your teachers.
>
> Now give briefly your reasons with regard to your first and last subjects.
>
> I like.....best because.....
>
> .....
>
> I like.....least of all because.....
>
> .....

III.—The computation of replies and resulting order of preferences.

The task of arriving at an ultimate order of preferences when lists were handed in by over 8,000 pupils, voting for a varying number of subjects was literally stupendous.

It would have been easier if a certain fixed number of subjects had been voted upon, but it was felt that the best results would be gained if the choice of subjects were unfettered. The numbers of pupils voting on the various subjects are given in Appendix I.[1]

I am greatly indebted to Mr. Howard Kennedy, M.Sc. (Dunelm), Senior Mathematical Master, Blackburn Grammar School, for suggesting a suitable method by which the mass of material obtained from the replies could be reduced to statistical form.

This method is described in detail in Appendix II.[1] Two points, however, must be made clear at once by way of explanation of the tables which now follow:

(*a*) The results are expressed on a scale from 0 to 200—200 being the mark if the subject is placed first by everybody; 0 the mark if the subject is placed last by everybody and 100 the mark if the subject is of average popularity;

(*b*) The differentiating points for the half-year age-divisions were taken as the third and eighth months of the year. Thus all between 13 years 3 months and 13 years 8 months, inclusively, were regarded as 13½ years old, and all between 13·9 and 14·2 as 14 years.

TABLE I SHOWING SCORES CLASSIFIED.
(Omitting decimals.)

	Boys in Boys' Schools.	*Girls in Girls' Schools.*	*Boys in Mixed Schools.*	*Girls in Mixed Schools.*	*Boys and Girls in Mixed Schools.*	*All Boys.*	*All Girls.*	*All Boys and Girls.*
English	121 (2nd)	131 (1st)	115 (2nd)	142 (1st)	127 (1st)	119 (2nd)	133 (1st)	125 (1st)
French	100 (5th)	108 (3rd)	70 (10th)	109 (2nd)	87 (8th)	96 (6th)	108 (3rd)	101 (5th)
Latin	74 (10th)	71 (11th)	86 (8th)	102 (5th)	94 (6th)	75 (10th)	76 (10th)	75 (10th)
History	114 (3rd)	117 (2nd)	115 (3rd)	108 (3rd)	112 (2nd)	114 (3rd)	116 (2nd)	115 (3rd)
Arithmetic	97 (6th)	99 (6th)	107 (5th)	95 (7th)	99 (5th)	98 (5th)	98 (6th)	98 (6th)
Geometry	77 (9th)	75 (10th)	89 (7th)	65 (11th)	79 (10th)	79 (9th)	73 (11th)	76 (9th)
Algebra	85 (8th)	93 (8th)	95 (6th)	92 (9th)	93 (7th)	86 (8th)	93 (8th)	89 (8th)
Geography	113 (4th)	105 (4th)	115 (3rd)	96 (6th)	107 (4th)	113 (4th)	103 (4th)	109 (4th)
Physics	95 (7th)	91 (9th)	83 (9th)	70 (10th)	79 (9th)	93 (7th)	87 (9th)	92 (7th)
Chemistry	126 (1st)	104 (5th)	120 (1st)	95 (8th)	111 (3rd)	125 (1st)	102 (5th)	117 (2nd)
Botany	—	96 (7th)	—	102 (4th)	—	—	97 (7th)	—

TABLE II SHOWING SCORES BY AGE-DIVISIONS.
(Omitting decimals.)

Boys.	12½	13	13½	14	14½	15	15½	16
English	116 (3rd)	115 (3rd)	114 (3rd)	115 (2nd)	123 (2nd)	124 (2nd)	122 (1st)	124 (1st)
French	92 (8th)	92 (7th)	94 (6th)	97 (5th)	95 (6th)	96 (7th)	96 (6th)	99 (5th)
Latin	95 (6th)	89 (8th)	74 (10th)	73 (10th)	69 (10th)	72 (10th)	72 (10th)	61 (10th)
History	117 (2nd)	122 (2nd)	114 (2nd)	112 (4th)	119 (3rd)	115 (4th)	113 (4th)	111 (4th)
Arithmetic	100 (5th)	96 (5th)	101 (5th)	96 (7th)	99 (5th)	97 (5th)	96 (5th)	99 (6th)
Geometry	81 (10th)	79 (10th)	80 (9th)	83 (9th)	76 (9th)	72 (9th)	82 (9th)	80 (9th)
Algebra	85 (9th)	94 (6th)	90 (7th)	85 (8th)	86 (8th)	81 (8th)	85 (8th	86 (8th)
Geography	106 (4th)	108 (4th)	108 (4th)	114 (3rd)	114 (4th)	115 (3rd)	119 (2nd)	121 (2nd)
Physics	95 (7th)	88 (9th)	89 (8th)	97 (6th)	89 (7th)	96 (6th)	94 (7th)	98 (7th)
Chemistry	124 (1st)	127 (1st)	129 (1st)	133 (1st)	128 (1st)	127 (1st)	116 (3rd)	120 (3rd)
Girls.	12½	13	13½	14	14½	15	15½	16
English	122 (1st)	133 (1st)	130 (1st)	135 (1st)	132 (1st)	132 (1st)	137 (1st)	135 (1st)
French	112 (3rd)	107 (3rd)	104 (4th)	106 (3rd)	108 (3rd)	111 (3rd)	111 (3rd)	113 (2nd)
Latin	82 (10th)	70 (11th)	75 (11th)	82 (9th)	81 (10th)	75 (10th)	68 (11th)	74 (11th)
History	120 (2nd)	112 (2nd)	116 (2nd)	120 (2nd)	115 (2nd)	114 (2nd)	120 (2nd)	105 (3rd)
Arithmetic	106 (5th)	104 (5th)	103 (5th)	100 (6th)	99 (5th)	93 (7th)	91 (7th)	90 (9th)
Geometry	72 (11th)	74 (10th)	77 (10th)	70 (11th)	68 (11th)	73 (11th)	71 (10th)	78 (10th)
Algebra	101 (6th)	94 (9th)	94 (8th)	95 (7th)	93 (8th)	90 (8th)	88 (8th)	91 (8th)
Geography	92 (9th)	104 (6th)	101 (6th)	100 (5th)	107 (4th)	109 (4th)	108 (4th)	100 (5th)
Physics	98 (7th)	98 (7th)	92 (9th)	81 (10th)	74 (9th)	82 (9th)	83 (9th)	97 (6th)
Chemistry	110 (4th)	106 (4th)	108 (3rd)	105 (4th)	96 (7th)	101 (6th)	96 (6th)	97 (7th)
Botany	92 (8th)	95 (8th)	95 (7th)	87 (8th)	98 (6th)	106 (5th)	101 (5th)	101 (4th)

Consideration of these results will be deferred until the reasons advanced in favour of and against the respective subjects have first been dealt with.

This course has been adopted because the reasons throw light on the positions taken by the various subjects.

IV.—REASONS FOR LIKING OR DISLIKING SUBJECTS.

There are two reasons which outnumber all the others in the pupils' answers. One is that the subject is interesting or uninteresting; and the other that the pupil can "do" the subject well or finds it difficult. These will be frequently referred to under the names "interest" or "lack of interest," and "proficiency" or "incapacity" reason.

The answers have been reproduced as far as possible in the pupils' own words.

ENGLISH.

In Favour:

The reasons advanced in favour of English are so numerous and so varied that only a very small selection of them can be given.

The attitude to the subject is distinctive, the words commonly occurring being "fascinating," "enthralling," and comments such as the following are of frequent occurrence: "I can lose myself in a book"; "It is a pleasure—not like other subjects."

The appeal of the subject is many-sided, so much so that comparatively few declare they like English because they can "do" it well. There are so many points of interest that the "proficiency" reason is excluded. The latter, however, appears rather more often amongst boys.

The most frequent form in which the reasons are stated is that the pupil is "*fond of*" reading, poetry, acting, composition. Of these, "fond of reading" occurs most often, especially amongst girls. Poetry, too, makes a strong appeal amongst girls, but is rather infrequently mentioned by the boys. Acting and the reading of plays are evidently the sources of pleasure to many.

English appeals very strongly from the utilitarian standpoint of helping the pupil to speak correctly. This is appreciated both as an accomplishment and as an aid to success in a business career.

"Whatever position one has, English counts a good deal. No matter how clever a man is, if his English is bad, it will count against him all his life."

"Anyone who is well versed and is able to speak English well is most conspicuous among inferior people."

" It is absolutely necessary to be proficient in English for any person who wishes to mix with society and be considered cultured."

English appeals also as a means of self-expression :

" When one is reading, one can put full meaning into it." " I am fond of giving my own opinion on various subjects." " I can express myself in essay-writing." " One can really give vent to one's own feelings." " I like to express my own thoughts in essays."

Discussion in debates and speeches is evidently much enjoyed :

" Lectures by boys for, say, five or six minutes, are likely to ' bring us out.' " " I like to take part in discussions. One can express opinions freely."

English is appreciated as a relief from other subjects, and from the world of every day :

" It is mostly about persons and not figures of any kind." " It is not mechanical grinding, no verbs, no dates." " The beautiful language is a change from every day talk." " It is an opportunity to escape from the commonplace of life." " It is a subject in which one can indulge without thinking that one is taking a lesson."

English appeals, too, because it is varied :

" It has a new idea on every page." " There is always something new cropping up and one's interest is constantly being renewed."

The æsthetic appeal of English is strongly felt, especially by girls :

" I like poems with rhythms and making sentences which sound pleasant." " The study of poetry and literature brings harmony and beauty nearer."

English finds favour also because of its knowledge-content and the broader outlook it gives on life :

" Reading books enlarges one's ideas and teaches many things one would not otherwise know." " It broadens one's mind and helps you to see things from other people's point of view."

This feature of the subject takes on a morality-value amongst girls at the age of about 16 :

" English teaches us the good things one ought to know." " In English new thoughts and views are being written which may lead to the bettering of men."

The detailed study of English in school is frequently admitted to be helpful :

" It enables you to understand the books and plays of famous writers better than by just reading the books yourself." " I am fond of poetry and this pleasure has been increased by helpful lessons." " The teaching helps us to see the real meaning behind great books and poems."

Some pupils confess to a lower motive and put English first because it is easy :

" There is no need whatever to do any work in the subject." " There is not much work about it and the homework is easy."

Against :

The last two reasons mentioned in favour of English have their counter-part in reasons advanced against the subject.

The fact that it is easy—to some a recommendation—makes others disinclined to give the time to study it. They feel " there is no need to learn English so much." " It is fairly easy to do and understand, which makes it not very interesting." " There is not much pride of conquest in it." " I can study this language by myself any time." " Most of us know it tolerably and the other subjects all need learning."

The detailed study, too, which many mention as helpful, is regarded by others as a disadvantage :

"Although I love reading, I think it spoils a book to pick it to pieces." " There is so much discussion that the interest is lost." " Though delightful to read, books and poems are not always so nice when picked to pieces and the bad side as well as the good is looked for." " It is difficult to concentrate on the set books, the study of which becomes mechanical owing to the examination in July."

The main objection to English, in the earlier years, is the dislike of the grammar that has to be learnt. This is more pronounced amongst girls than boys :

" We have to learn lots of dry parts of speech " is typical of a great number of replies. " You don't need to know case and voice and other things like that to talk properly."

Above 14½ the objection to grammar is not particularly mentioned, perhaps because less of it is done.

The prevailing reason "against" now becomes that the books read are uninteresting :

" Many of the books we are forced to read are dry and stodgy." " It is a matter of reading boring books. Why cannot interesting books be chosen ? " " The books chosen are usually dull and difficult to understand."

A decided aversion to poetry becomes evident amongst boys at about 15. It is never mentioned by the girls :

" I have never had any liking for poetry." " Some of the poetry is too highbrow." " Learning poetry is decidedly boring, useless and sentimental."

A consciousness of disability in essay writing often makes English unpopular. This is much more a matter of concern to girls than to boys:

"I can't think out interesting paragraphs." "I can never find anything to write in composition." "I find it difficult to express my thoughts in words and the subjects chosen for essays do not interest me."

HISTORY.

In Favour:

The "proficiency" reason is hardly ever mentioned in connection with History. The almost universal reason for liking the subject is interest in the past, and one cannot but gain the impression, on reading through the comments, that this interest amounts to a real appreciation of the subject.

There is something more than sober commendation. The words "exciting" and "thrilling" are used, and the remark is frequently made that history is the least like a lesson of all the subjects learnt.

"History makes me forget more or less about school." "It is more like a tale than an ordinary lesson." "History is like an adventure." "It is the one long story of the world, told in such a pleasant way." "All the characters have nearly always a thrilling point in them."

History appears to make a strong appeal because it is real and actual: "It is like reading and studying a book which is true." "It is like a story traced from century to century about real people who have lived." "It is a living subject and I like it because it is real and true." "It is like a long, true story which happened to men and women."

The subject appeals also because of its variety:

"It is not all about the same thing." "There is something new all the time." "It provides continual interest by the fresh views which are always being put forward."

The patriotic motive, too, is strongly in evidence:

"It is nice to hear the things that have built up England." "It teaches us to sympathise with the people who have helped to make England great." "We learn about the struggles our country had to become a great empire." "Anybody who is at all patriotic should enjoy learning about how our Motherland became the greatest country in the world."

It is instructive to note the points which are mentioned as being of interest at different ages.

Up to about 13½, the word "kings" occurs frequently in the answers:

"I like to hear about the old kings and queens and what they did." "It tells us about the kings and queens who once lived." "We see what king has done all he could."

After 13½, kings are hardly ever mentioned, and the focus point of interest is transferred to the people—" how they lived and dressed "—" their manners and curiosities and inventions."

Delight is taken in comparing these with the customs of the present day.

Later, at about 14½, the interest seems to centre round the growth and development of industries, trade and colonization. There is still very frequent mention of the people and how they lived, but a new interest becomes evident in tracing a line of development through the centuries. Causation is now referred to :

" We see how each event, however small, led to the rise or fall of a nation." " One fact leads on to another and everything which happens has a reason."

Later again, the " struggles for supremacy and freedom " are the points of interest specifically mentioned.

It may be that this gradation of interest is merely co-incident with the course of history as usually planned in the schools, but it is also possible that the interest in the subject becomes less personal and more conceptual in the later years of adolescence.

Against :

The number of pupils who claim they cannot " do " History is small. Most of those who place the subject last do so because they say it is uninteresting, and the point of dislike most frequently mentioned is the necessity of learning dates. About 50 per cent of the reasons contain a complaint on this ground :

" Dates are terrible to learn." " Dates spoil the enjoyment."

Just as in History's favour there is evidence of a widespread and intense interest in the past, so there is evidence also of a very definite, though less general, indifference to the past, which tells against the study of the subject.

The following are typical of a large number of reasons :

" There is no use learning about the past. I want to know what is happening now." " There is no sense in learning hundreds of dates and names of kings, when everything of those days has disappeared." " I am not interested in what happened years ago, before I was born." " I don't want to know what such and such a king said to his Parliament." " It tells you about the past which we don't want to know about."

It is difficult to believe that these comments are made about a subject which arouses so much interest and even enthusiasm in a great number of pupils.

The only explanation possible is that in the case of those who hold this definitely antagonistic view there has been wrong emphasis in the teaching of the subject ; this is shown by the points that are objected to—quarrels, dates, kings, battles and family trees :

" The trees are dry and some kings are dry." " Learning facts spoils the rest." " There is nothing that really concerns the life of ordinary people then or now."

The method of teaching History by making the pupil write out notes and learn them is obviously still practised and is cordially disliked :

" There are so many notes to copy and learn." " There is hardly any change in it for we always have to write notes." " We write out all our notes as tests and so do not learn it in an interesting way." " You have to do a lot of swotting and cramming from notes."

In Favour : GEOGRAPHY.

The reason which places Geography first in a list is almost universally the interest felt in knowing more about the world in which we live. The " proficiency " reason is almost entirely absent, and the utility value seems also not to be appreciated.

It is surprising that Geography is only seldom mentioned as being useful for travel, although if the interest in Geography which is mentioned so frequently were analysed it would probably include this value.

The fact that Geography is so varied is often mentioned as a recommendation :

" The subject varies with the countries studied." " It deals with a subject which is always changing." " When you think you have learnt about one country, you always find another new country to study."

The wide scope of the subject also appeals " It covers such a vast ground and makes people broadminded."

There is considerable evidence that the interest in Geography is largely an interest in the *people* of the countries studied. Over and over again the reason advanced is that the subject " tells us about other people and how they live."

In the earlier age-divisions, many put Geography first because they like drawing maps. There are more girls who mention this than boys, and it is obvious that the fascination of drawing maps is more frequent as a reason in favour of Geography than the dislike of map drawing is a reason against.

It is surprising that there is such infrequent reference to causation in Geography. Only very occasionally is it stated that the pupil " likes

the way past ages have affected the present and the position of hills and rivers influenced modern towns and trades." The inference may be that this aspect of the subject is not generally stressed in the teaching.

Amongst boys, as might be expected, there is frequent reference to the interest in discoveries and explorers, and to the fact that Geography deals with the *actual* globe on which we live.

Against:

It is because Geography does not deal with the *people* of other countries that it is very frequently disliked:

" It is about the countries, not about the people there." " We seem to do nothing else but talk about climate and hills and never about the people." " I take no interest in physical features. I would prefer to hear about the people there."

Apart from this, the reasons against are mainly that the subject is uninteresting. The papers hardly ever contain the plea that the pupils concerned cannot " do " the subject, though occasionally it is stated that it is difficult to remember and it is said to be " a very easy subject to muddle."

" Geography is mostly mere learning by heart." " There is such a lot of learning names of towns, lakes, etc., and imports." " It is bewildering, so many things have to be learnt." " It seems a muddle of names."

The complaint is advanced also that this learning has to be done in an uninteresting manner out of books:

" We have to read it all in books and I do not like reading out of the book." " We do not take a town and talk about it but just go on reading."

The term " World Geography " seems to dismay some of the more timid of the pupils:

" It is too broad a subject to learn in four years." " It is spread over such a large area that it cannot be learnt in detail." " It is almost impossible to learn completely, even the mere outlines of the subject."

There is surprising evidence, too, of a parochial attitude towards Geography:

" It tells one about foreign lands where one does not hope to or even wish to go." " It is no use knowing where rivers and mountains are situated, except in our own country." " English Geography is all right, but the Geography of other countries does not interest me."

These reasons are mostly to be found amongst the younger children, but it is fairly frequent also amongst the older.

The girls, particularly, seem to be concerned because they find it difficult to locate places on a map:

" I never can remember in what position certain places are." " I feel as though I know nothing about where towns and rivers are." " I have no idea where any towns are."

The dislike of map-drawing is mentioned occasionally, though not as often as one would expect.

An interesting reason, showing the need in the child's mind for systematization, is the following :

" There seems to be no underlying principle, but each thing has to be learnt separately. Thus it is not possible to think about a question. It has to be known."

In Favour : ARITHMETIC.

The reasons advanced by girls in favour of Arithmetic are mainly that they can " do " the subject well, but in the earlier years the word " interesting " is used almost as often.

After about 14 the subject is hardly ever described as " interesting," and the reasons are almost exclusively in the direction of proficiency. The disappearance of the description of the subject as "interesting" is probably due to the fact that Arithmetic is a subject that has been taken from earliest years and that as the pupils get older the interest " fades out."

The subject is only occasionally described by girls as useful in after life, except for a period about 14, when this reason is advanced fairly frequently.

When we come to consider the attitude of boys to Arithmetic we find that the proficiency reason is, as in the case of girls, more important than " interest."

Amongst the boys, however, the usefulness of Arithmetic in after life is the commonest reason of all.

Apart from the reasons already mentioned there is strong evidence amongst boys and girls of a keen delight and zest in the hard work associated with Arithmetic. The words " pleasant pastime " and "curious fascination " are used, and over and over again reasons of the following type are met with.

" It keeps my brains working all the time." " I like the subject in which there is hard working." " There is plenty to do and it keeps you busy." " It makes you exercise your brain and keeps you working."

There is an obvious delight here in self-activity and in the operations of Arithmetic as such :

" I like working of any kind." " I like cancelling sums very much. It is nice to see them getting smaller." " It is interesting adding up large numbers and checking the answer."

There is also a very common belief amongst pupils that Arithmetic " develops the mind " :

" It trains the mind and works the brain." " It helps the brain to develop better and therefore think better." " It is good for our brains to work out large sums."

Another reason commending Arithmetic is the delight in solving problems, which is frequently mentioned :

" It makes us work hard so as to puzzle out the sums and I like puzzling out sums."

There is also the sense of challenge in connection with puzzling out problems, and a feeling of satisfaction and pride when the result comes out :

" I never give up trying till I find out the right answer." " It is exciting when working out a sum and the answer is a great surprise." " There is much to be proud of if I solve a difficult sum."

Other reasons in favour of Arithmetic are that it is " straightforward and needs least memory " :

" There is hardly anything to learn and it can be done by just using common sense."

Against :

The reasons brought forward against Arithmetic amongst both boys and girls are nearly all based on a feeling of incapacity. The words " difficult " and " muddling " are constantly used, and the word " uninteresting " only occasionally appears.

Many attribute their inability to the fact that they " cannot take things in " quickly :

" It takes me a long time to understand new sums." " I find a difficulty in working out sums accurately and quickly like other boys."

There is evidently a general feeling of strain and stress, and the protest is frequently made that there is no relaxation in the subject :

" There is so much working in it and it is all hard thinking." " It is boring to keep on working and adding up."

The puzzling nature of the problems obviously disconcerts some girls greatly :

" I am no good at puzzling out problems. They need too much patience. They are so twisted and turned about." " One has to puzzle one's brain so much about such a lot of uninteresting problems."

Boys, however, do not appear to be worried greatly by problems. They seem to be troubled more by the fact that Arithmetic is, to them, lacking in variety :

"There is nothing in it but the same old thing—figures and multiplying, division, addition and subtraction."

"Dull" is the frequent word in the boys' reasons.

ALGEBRA.

In Favour:

Interest is the predominating reason given in favour of Algebra, though it is not so much more frequent than the "proficiency" reason, as in most other subjects. It occurs in relation to proficiency in the ratio of about 3 to 2. The "utility" reason occurs occasionally amongst girls, without reference to after life—more frequently amongst boys, though even amongst them the question of utility in regard to Algebra does not appear to count a great deal.

This statement applies particularly to references in the answers to utility in general. There is a more immediate aspect in which the usefulness of Algebra is frequently mentioned, and that is the way in which problems can be more quickly and easily solved by Algebra than by Arithmetic. This practical advantage arising from a knowledge of Algebra seems to appeal more strongly to boys than to girls:

"I can do sums by letters which I could not do in Arithmetic." "It is useful for doing sums which would take a very long time in Arithmetic." "I like solving equations without working out a great number of figures."

There is again the love of solving problems, very frequently mentioned. With regard to these, the girls say they find it "pleasant," "fascinating," and "exciting," when "wondering if the problems will come out." The boys tend to speak of it as "jolly good fun":

"It is more like an exciting game than work." "So different from most subjects in its way of solving." "It is nice to go on puzzling out."

In connection with this may be noticed the satisfaction that comes from successful working:

"There is generally a tussle to get the hard sums out and a sense of triumph at the end." "The answers come out perfectly to my great satisfaction and the sums can be checked."

The interest in the actual mathematical processes is again in evidence as in Arithmetic:

"I like working out equations and factors; it is very interesting, especially when you have to remove all the brackets."

"It is interesting to work out dreadful lines of figures and find out how small the answer is—also you can make it look so neat."

The sense of exultation in the sheer doing of hard mental work which was noticed in Arithmetic seems to be absent in Algebra, although here,

again, it is claimed that the subject " develops the faculty of quick and accurate reasoning " and " keeps your brains awake."

There is also the feeling that Algebra is " straightforward and needs just commonsense "—" that it gives no place for cramming "—that " everything follows logically, and it is nice to go through step by step."

Against:

" Incapacity " is the basis of most of the reasons against Algebra, rather than lack of interest, although the word " uninteresting " occurs more often than any other amongst boys in the later age-divisions.

There is general complaint that the subject is confusing ; " Muddling" is the word most frequently used :

" I can't get into the system and get mixed up with the brackets and everlasting x and y." " I can't understand it however much I grope."

Another reason " against " is the lack of variety :

" It is very similar all the way through—nothing but uninteresting figures and letters."

" You get weary of writing x and y every period you go to it." " It is so uninteresting and as we say ' stale.' "

There are many who declare they are not mathematically inclined :

"Algebra is too mechanical and methodical." " It is too exact and without poetry, and it gives no scope for the imagination." " It deals so much in the abstract."

Quite a number object to learning Algebra, when, as they think, " problems can be worked by Arithmetic just as well " :

" I dislike calculating in x and y and prefer numbers." " Why use symbols and signs when the sums can be done in a straightforward way ? "

Amongst boys, particularly, this objection to Algebra is apparent, and it is expressed in no uncertain terms, e.g. :

" It is rotten messing about with x and y when Arithmetic offers numbers."

" No sense in it." " No object in it," and " ridiculous in my opinion " occur frequently.

GEOMETRY.

In Favour:

The ability to do the subject well again appears less frequently as a reason for liking Geometry than the fact that it is found to be interesting. The interest in this case, as largely in the other Mathematical subjects, is the interest of puzzling things out, and fathoming problems—in proving " riders " by the aid of propositions :

" I am fond of solving the problems that seem difficult at first sight especially the tricky ones." " It teaches one to work out things for

oneself." "Everything has to be proved and it is very evident when the proof is wrong."

Boys obviously regard these problems more as a challenge than girls. At any rate, it is amongst the boys' reasons that one finds such as the following:

"The problems keep you at it, until you have finished them, and they must come out some way or other." "I like baffling problems which hold you till you solve them."

Another reason mentioned more frequently by boys is that Geometry "gives the brain more reasoning to do than any other subject":

"It needs accuracy and attention and makes you think." "Each fact is the logical conclusion proceeding from previous facts." "It consists of reasoning and therefore seems to have some object—developing the powers of reasoning."

"It needs straightforward thinking and plain statement, and there is no hard slogging." "You have to think how to prove what you say." "It helps you to be certain and sure in various things you say or do."

Another recommendation in favour of Geometry, found in all age-divisions, is the delight many obviously find in making figures with compass, pencil, and ruler:

"Diagrams are interesting to construct and need care in the drawing of them." "A number of pretty designs can be made by Geometrical constructions." "I like drawing the figures to definite measurements."

This, in the case of some girls, seems to satisfy their love of neatness:

"Geometry gives one a chance to be neat." "I like writing out the propositions. They look neat when you have finished." "The subject needs such a deal of accuracy and neatness."

Against:

The reasons given against Geometry are mainly inability to "do" the subject and lack of interest in it—the inability is more frequent, in the ratio of about 3 to 2. The words "puzzling" and "muddling" occur most frequently. A small number throughout say that Geometry is of no use in after life. These occur mainly at about 14½, and this reason against is more prominent amongst boys than girls. Again, boys give expression to their dislike on this ground in no uncertain terms:

"I utterly fail to see the use of it." "I can't see any real use for it." "It seems silly, nonsensical work."

There is considerable feeling against the amount of learning required. This reason comes in at about 14:

"It is rather dry learning postulates off like a parrot." "There are such a lot of difficult theorems to remember and everything in geo-

metry has to be learnt by heart." "There is too much reliance on memory rather than thought."

Many object to learning Geometry because of the drawing with instruments connected with it. This reason occurs mainly amongst girls :

"I am not good at Drawing and do not like to be bothered with fiddling instruments." "It is so intricate and confusing to have a large number of lines crossing, and I am clumsy when drawing figures."

An unexpected and quaint objection, again found largely amongst girls rather than boys, is that it is absurd to take the trouble to prove things that are obvious :

"Hours of patient endeavour are spent on proving a fact which can be seen by the naked eye immediately." "I do not think it sensible to prove things equal when one can see they are equal." "If one has a set of instruments, then why not measure the angles instead of writing down a long proof?"

Connected with this is the obvious feeling that Geometry leads nowhere :

"It seems all if's and but's—not practical, and you don't know much more when you've finished." "The subject deals with nothing practical and one is working entirely with assumptions." "It is too drawn out with no definite object in view."

FRENCH.

In Favour :

The reasons advanced in favour of French seem to indicate clearly that the subject is genuinely liked. The statements made both by girls and boys "ring true." "Interest" is the prevailing reason amongst girls, though a very large number mention that French is useful, especially for travel. A smaller, but still considerable number, give the "proficiency" reason.

Amongst boys, the utilitarian reason comes first, and it is vocational more than "useful for travel."

A large number give their interest in the subject as their reason for liking it, and only slightly fewer put it first because they are able to "do" it well.

To girls, French makes a strong æsthetic appeal. They like the sound of it :

"French is a very beautiful and musical language." "One learns to love French because of its sweetness of sound." "It is a pretty language and I like the soft musical sound of the words." "The language is musical and pleasant to speak and hear."

The appeal of the language is not æsthetic in quite the same way to boys. They find it " entertaining," " novel," " agreeable," " good fun " —" it goes with a swing."

Another difference between girls and boys in connection with French is that the language is very widely valued by girls as an accomplishment. This value is hardly mentioned by boys.

The following are typical of a large number of reasons given by girls :

" It is nice to know that in a few years I shall be able to speak two languages instead of one." " It is nice to say you know French."

With boys, French seems to gain a certain amount of popularity, because it is not like Latin. This reason is scarcely ever advanced by girls.

Reasons such as the following are very frequently given by boys:

" It is almost word for word, while in Latin there are several forms of each word." " It is spoken to-day and French literature deals with topical subjects and not ancient ones as does Latin.

Deriving from the same feeling as this contrast with Latin is the similarity, often felt, of French to English :

" It is so very much like our English language to learn." " When doing French, it is like doing English only a little harder."

Interest in derivations often tells in favour of French :

"A number of English words come from French and it helps to show one the meanings of them." " One likes to see how words are derived."

French is also liked because of the variety it affords :

" It is ever new and seemingly inexhaustible." " Two lessons are never the same."

French is frequently highly appreciated because it helps the pupil to satisfy his need to know more about people. This is particularly noticeable amongst girls' reasons, where the word " people " occurs again and again :

" It is interesting to learn about the customs and habits of other people." " By learning this, I know more about the French people."

Games, correspondents, and French newspapers are often mentioned as points of interest.

Against :

The great majority of pupils who put French last on their lists do so because they find it difficult. Lack of interest is not often mentioned.

It is nearly always the difficulty of Grammar that is complained about :

" It seems to be all verbs and nouns, put so awkwardly in a sentence." " I find it so muddling. All the rules have lots of exceptions and I get them all mixed." " It is so puzzling to make words agree and the accents are as confusing as the genders." " I dislike it because of the huge

number of irregularities and awkward pronunciations." "It is so drab a job to be continually learning Grammar."

There is considerable evidence of genuine effort, leading through failure to despondency, on the part of the girls and in the case of the boys to despair and disparagement:

"I try hard to learn it but fail." "I cannot learn Grammar rules unless I spend hours over them and then I don't know them to construct sentences."

"No matter how I try I cannot get on." "I don't know much about it and I don't want to."

There are many complaints that it is monotonous to have French so often in the week:

"We have too much of it—seven times a week." "We get a bit fed up with it because we have it nearly every day."

There is also fairly frequent resentment that it is so long before the interesting part of the subject is reached:

"French is so dull and it takes a good three years before you can read books written by well-known writers." "You have to learn the language a long time before you can read its literature."

In this connection, a plea is put in many times for the human interest to be introduced:

"I think it would be more interesting if we were told of the various habits of the French." "You do not get much information about the French people and their ways."

In Favour: LATIN.

Of the reasons for putting Latin first in the list of subjects, the chief seems to be the fact that the language is found to be within the power of the particular pupil. There is a sense of power over the language and an ability to use it with facility. "It comes easily to me," are the words most commonly used.

This obviously brings with it a certain amount of interest which is mentioned in about 50 per cent cases in the early age-divisions, but seems to disappear as a reason above 14½. It must be remembered, however, that the number putting Latin first is comparatively small.

A considerable reason seems to be that it is interesting to trace the derivation of English words from Latin:

"Many words of our language are derived from Latin words, and it improves our own English vocabulary to find them out." "Words I did not understand are quite simple now." "It is useful for finding roots of words."

Many mention that Latin is liked because it helps other subjects, particularly English, and because it is the key to other languages :

" It makes me think and I learn my own language." " It is the root of all languages." " It is the tongue on which all languages are based." " In order to have complete knowledge of English, you have to know Latin."

Against :

The attitude shown towards Latin is governed almost entirely by the difficulty of the language.

Most of the reasons given refer to the difficulty of having to learn so many endings—the noun-endings, especially are mentioned, the verb-endings apparently being less difficult, as having been met with previously in French :

" The declensions and verbs puzzle me awfully." "Almost every word is declined, and I mix everything up and decline them wrong."

" Those terrible declensions and conjugations won't stick in my head and this subject is chiefly made up of them."

The adjectives of complaint most frequently met with are " uninteresting " (very extensively), " muddling," " complicated," " puzzling." There seems to be a genuine failure to understand after genuine effort :

" I cannot understand it, however hard I try." " I cannot get it clear though I have tried very hard."

This failure to succeed in the language may induce an attitude of distress and despair :

" I dread the lesson coming." " I am hopeless at it and would give it up, but the Head won't allow me, so I grudge doing it." " I have tried to improve but all my efforts seem to have been in vain."

" I often spend an hour instead of a half on my Latin homework and get more punishment for it than any other work. I shall never be able to understand it, however much I try."

This attitude of despair becomes in the case of boys in many instances one of impatience and abusive disparagement of the language. This intense feeling of dislike must re-act unfavourably on school work in general.

Perhaps the commonest reason of all against Latin is that it is a dead language, and that, therefore, it is a waste of time to learn it. The prevalence of this reason is one of the most striking facts emerging from the investigation :

" I like to know of living languages, not of just dead things which are useless." " I think I am wasting my time in learning it, as it is a dead language." " It is foolish to learn a dead language when there are many others unknown."

There is general complaint that the subject matter of the language is uninteresting:

All the books we translate into English are just very dull and there is nothing in them which makes you want to read more." "It is all about war with nothing of our everyday life in it. I hate learning about ancient people like Cæsar."

"The subject has never aroused my interest, having no place in modern everyday life." "I do not want to learn about Cæsar's methods of waging war, or the habits and customs of the ancient Romans." "It is not applicable to modern ways of life and breeds a tired and dull imagination."

Protest is frequently made that progress in Latin is too slow:

"The advance is so slow. We take hours to learn a few words."

"So far we have been so busy merely trying to fathom the meaning that we've been too distracted to see much beauty in it." "By the time I have translated I am too weary to appreciate the beauty of the Classics."

(To be continued.)

Résumés in French and German will be given at the end of Part II in the next number.

THE NECESSARY IMPERFECTIONS OF AN EXAMINATION.

By FRANK SANDON.

I.—*The working of an examination.*
II.—*Fluctuation E—The grading fluctuation.*
III.—*Fluctuation D—The weighting fluctuation.*
IV.—*Fluctuation C—Instability of the candidate.*
V.—*Fluctuation B—Unreliability of the questions.*
VI—*Fluctuation A—Invalidity.*
VII.—*The fluctuations jointly.*
VIII.—*Summary.*
IX.—*Note: a corollary of these effects.*

I.—The working of an examination.

In view of the work of various writers on matters relating to validity, reliability, and allied aspects of examinations, on the one hand, and of the criticisms about the modern examination system by educationalists, such as Valentine[1] and Hartog[2], and some of the teachers' organizations, on the other, the present seems an opportune time to survey the field and to see what exactly we may expect from a modern examination. For this we shall first watch such an examination working, when some such procedure as the following is commonly adopted.

(1) An examination in a particular subject is proposed for some individual.

(2) A syllabus in that subject is prepared.

(3) A decision is made that the examination will take a particular form, e.g., either a written examination visually administered, lasting three hours, embracing a choice of eight of ten questions eliciting essay type answers, or a *viva voce* examination individually and orally administered, lasting twenty minutes, embracing a large number of questions eliciting short answers, and so on.

(4) An examiner, in the capacity of a setter, selects certain topics from the syllabus on which he will set questions.

(5) And on these topics he sets certain questions.

[1] Valentine, C. W.: *The Reliability of Examinations*, 1932. (Univ. of Lond. Press.)

[2] Hartog, Sir Philip: *Examinations and their Relation to Culture and Efficiency*, 1918. (Constable and Co.)

(6) A moderator or reviser reads the questions in relation to his knowledge and experience of the syllabus, the object of the examination, and the expected capacities of the candidates, and modifies the questions as seems desirable.

(7) The examinee, at a particular epoch (date and time of day), receives these questions from a supervisor. Before an invigilator he reads, or hears, them, chooses from them, if necessary, gives the best answer that he then can to the selected question, and proceeds to the next. If he has sufficient time, he finishes all the questions that the setter wished him to tackle and may turn back to revise, add to, or re-write his earlier answers; if he has not time he either does what he can to some and leaves others quite untouched, or gives what he considers the main points of each and submits an incomplete answer to each.

(8) The scripts are placed before the examiner, in his capacity of marker, for evaluation. To aid him in this he has previously prepared, or now prepares, a more or less detailed schedule of the marks, assigning a maximum to each question, and dividing this up between the parts of the question, or the different aspects of it, as he thinks fair and necessary.

(9) The marker, or his deputy, reads each script and assigns to it the appropriate mark from the schedule.

(10) The marks of each question are grouped and a final mark assigned to each of the candidates, this often being done by entering the separate marks on to a mark sheet and summing them.

(11) The marks of each candiate are then revised as seems necessary, e.g., to conform to a particular law of distribution, to allow for age, etc.

(12) The marks are then published as the candidate's score in the subject of the examination.

Such in outline is the procedure often adopted (see, e.g., Crofts and Jones[3]), modifications being made as necessary. It is obvious that at practically every stage there is a liability of error, biassed or random, and that as a result the numerical measure finally adopted will not really be an accurate estimate of the required value. We call the required value the criterion: it cannot be measured directly, and much of our trouble with examinations lies in this fact. Statistically, i.e., in relation to other candidates of the same or different examinations in any subject, a mark may be in error in various ways. The marker may have taken too high, or too low, a standard; he may not discriminate sufficiently between the candidates; he may not rank them in proper order, etc. These errors will be evidenced in the statistical constants such as the mean, giving the

[3] J. M. CROFTS and D. CARADOG JONES: *Secondary School Examination Statistics*, 1928. (Longmans, Green and Co.)

general level of marking, the standard deviation, giving the width of the discrimination, the correlation, giving the resemblance between the marks assigned and some measure of the candidate's aptitude. Let us see how the errors may arise. There are four main parties to any examination—the syllabus framer, the topic and question setter, the candidate, and the script evaluator.

(1) The syllabus framer is responsible for preparing a syllabus that will include the important and omit the unimportant aspects of the subjects in relation to the abilities of the candidate and the needs of the examination.

(2) The setter similarly is responsible for making a fair selection of topics from the syllabus and for framing questions on these that will call up appropriate replies, sampling from all those possible resulting from the candidate's mastery of the subject.

(3) The candidate is responsible for marshalling his knowledge and organizing his expression at a particular time when stimulated by certain questions to give clear, concise, relevant, and accurate answers to the questions.

(4) The script evaluator is responsible for preparing a schedule and working to it.

Fluctuations and errors therefore arise at each stage that will prevent the final result from giving a true measure of the criterion. This imperfect measure will have, in general, non-perfect correlation with the criterion, and we may, I think, recognize the following fluctuations as causes of such non-perfect correlation.

(*A*) The questions chosen do not give a fair sample of the whole field of the subject, either because they are an unrepresentative sample, or

(*B*) Because they are too limited in number and give only a small sample.

(*C*) The candidate is unable to give a fair sample of his skill at the questions by reason of ill health, or physical distractions, wrong 'set,' or psychical distractions.

(*D*) The marker chooses a schedule that does not weight appropriately the various units of the answers before him as samples of the candidate's mastery of the subject.

(*E*) The marker fails to interpret consistently the schedule that he has agreed should be the basis of his evaluation, by reason of much the same causes as those given for the irregularities of the candidate.

The various errors that arise can all, I suggest, be assigned to one of other of these five fluctuations. The terminology that we adopt here

for the fluctuations, and later in this paper, has been a matter of anxious consideration. The words "error," "oscillation," "variation," and "variance," "consistency," etc., have all precise connotation in statistical theory. Invented terms are often cumbersome, or suggest nothing spontaneously: I regret that I have none apt to submit. An alternative nomenclature, as here adopted, of A, B, C, is not satisfactory, as has been proved by the experience of biochemists working with vitamins. We have therefore, as often in, e.g., psychology, economics, etc., to give to popular terms a more precise and restricted connotation; we have chosen what we think are the best possible terms, but it must be understood that they bear the special meaning that we have assigned to them in this paper.

We shall now proceed to consider these five fluctuations separately as far as we can. In actual practice they cannot be separated; all will occur simultaneously. We shall choose examples, however, that will emphasize in turn one particular aspect as much as possible. For reasons of space it has not been possible to give detailed criticisms of the experiments, etc., of the papers that we refer to, but the conclusions that we suggest are based on a somewhat critical reading of all the references and a review in the light of our own experience. For the purpose of simplifying the argument we shall consider the fluctuations in the reverse order to that given above.

II.—FLUCTUATION E: THE GRADING FLUCTUATION.

A marker has a script and a schedule; what mark should he assign? Errors here arise in various ways. Edgeworth[4] has indicated some of them: such are the least count—*minimum sensibile*—error, say, 5 per cent per simpler answer; correction at great speed, say 25 per cent per answer; and fatigue of examiners, say 1 to 2 per cent per script. He also referred to the personal equation of the examiners, estimating the nett effect as 2 or 3 per cent in all (see note at the end of this paper on the interpretation of this expression). Sir Philip Hartog, the Director of the International Institute Examinations Enquiry, in a private communication to the writer, has called attention to the difference to the marks allocated by the same examiner at different epochs. The subjectivity or objectivity of the questions and answer, and the marker's mental make up, will give rise to wide fluctuations in this way, particularly where æsthetic judgment is concerned. The difficulty of accurate judgment is, however, experienced

[4] *Journal of the Royal Statistical Society*, LI, 1888, pp. 599-635; LIII, 1890, pp. 460-475. *See* Summary, SANDON, F., *Forum of Education*, 1926, Vol. IV, Part 3, p. 223.

in cases of other types of judgment, not obviously of this character, as well. Thus, at the beginning of a standardizing meeting for a panel of about twenty school certificate examiners, the following results were noted.

Script.	*A.*	*B.*	*C*	*D.*	*E.*
Lowest	24	39	50	53	57
Examiner X	32	48	60	78	64
Highest	44	48	71	80	84

It should be noted that all the examiners had a very detailed three-page schedule before them and had spent about twenty minutes marking each script. The object of the standardizing meeting was, of course, to remove, as far as possible, the source of such fluctuations due to varying interpretations of the schedule of the candidate's unsuccessful attempts, etc., and from the examples given such a conference is a very necessary stage in the examination procedure. This fluctuation, which we shall call the Grading Fluctuation, has been the subject of considerable discussion in recent years among certain teachers' organizations as a result of what is known as the Durham Experiment. This was an analysis of some scripts written for a Durham School Certificate Examination; the details have not been published in any suitable or scientific form, and appear to confirm merely the well-known proposition that the grading of essays is subject to considerable fluctuation. There are references to this fluctuation scattered about the literature, but very little that is really useful. V. M. Sims and other American writers[5] quote correlation coefficients between the ranks or marks of two judges of essay papers, etc., as of order ·25 to ·98, though the majority run to a value of order ·6 or ·7. Mrs. G. Perrie Williams had apparently much valuable information to hand in her recent investigation[6] but the tables that she publishes are quite unsuitable for any statistical analysis. Boyd[7] is a little more helpful. From him, p. 35, we compile the following:

[5] *J.E.P.*, i.e., *Journal of Educational Psychology* (Baltimore, Md., U.S.A.), 1934, Vol. 25, Part 3, p. 172; *J.E.R.*, i.e., *Journal of Educational Research* (Bloomington, Ill., U.S.A.), 1933, 27, 1, 26; *J.E.P.*, 1930, 21, 1, 52; *J.E.R.*, 1933, 26, 9, 639; *J.E.R.*, 1931, 24, 3, 216.

[6] *The Northamptonshire Composition Scale* (Harrap, 1933). Her tables run from pp. 28 to 80 and the one obvious table, a double entry one of final marks for all scripts (50 in all) and all examiners (199 in all), from which her 34 pages of tables, pp. 30 to 63, could be deduced, as well as much of greater value, is missing.

[7] *Measuring Devices in Composition, Spelling, and Arithmetic.* (Harrap, 1924.)

Script.	23	11	20	16	5	18	21	8	14	1	25	26	3
Examiner E	Ex	Ex	VS	VS	VS	VS	S+	S+	S+	S+	S+	S	S
Examiner F	Ex	Ex	VS	VS	VS	VS	S—	MS	S+	S+	S+	S	S

Script.	10	15	4	13	19	6	7	12	24	2	22	9	17
Examiner E	S	S—	S—	S	S—	MS	MS	S—	S	S—	U	MS	MS
Examiner F	S—	S—	S—	U	MS	MS	MS	U	U	U	U	U	U

(MS=Moderately satisfactory; U=Unsatisfactory.)

The relationship between these two could be computed by contingencies, but as it seems convenient throughout to give the product moment coefficient of correlation we can do this if we assume normal distribution, use Sheppard's Table for the accumulated frequency, and thus assign scores to the grades. If then we calculate the value of r for the marks given by the two examiners we have a value of ·876. Boyd gives the grades for eight markers, two severe, two lenient, and four chosen at random. There are $\frac{1}{2}(8\times7)$ or 28 correlations possible, but as we have computed the correlation for the first two of his random examples and casual inspection does not indicate that there is anything exceptional about them we may conclude that the intercorrelations between the markings are of this order. It is to be hoped that workers who follow Boyd and Perrie Williams in the question of the Grading Fluctuation, or of the general one of objective and subjective marking, will report their results in a suitable form. We understand that this is to be done for the Durham Experiment.

It may be noted that the Hartog Effect may be quite pronounced even in an objective test. Thus it was found that in the administration of the Dearborn Test[8] that 73 per cent of all the tests when re-scored contained an error of marking (cf. Edgeworth, loc. cit.) It should further be noted that oral examinations are particularly subject to the Grading Fluctuation. The absence of any material answer, which leads to the difficulty of comparing memories of replies separated in time, the added difficulties, from the examiner's point of view (which alone we are now considering), of features, such as the candidate's speech, dress, personal appearance, which are probably, though not necessarily, irrelevant to the examination, all these are the cause of fluctuations in oral examinations

[8] *J.E.P.*, 1929, 20, 3, 178.

and interviews which result in grades varying very widely. Improved technique in such examinations, e.g., by the use of standardized questions, rating scales, etc., reduce the fluctuations due to this cause for oral examinations so that we have reported an r of order ·6 or equal to ·8[9].

III.—Fluctuation D: The weighting fluctuation.

A schedule has to be devised to allow for various possibilities of answers, types of answers, bits of answers, attempts at answers, for the questions of a paper. How should the markers deal with these possibilities? This again has often been dealt with in the literature; it can conveniently be referred to as the Weighting Fluctuation. A schedule implies a particular multiple regression equation in which weights are assigned to the variates representing scores in particular answers or sub-divisions thereof, as the writer has previously pointed out.[10] Theoretically, to obtain a good estimate, some of the coefficients in such an equation (i.e., the weights) may be negative, though teachers as a rule are very hesitant about using such weights. The effect of various investigations is that it does not matter particularly what weights are assigned to the questions so long as they are not too unreasonable: the correlation between the markings on the two sets of weights will run high. Thus we have reported values of ·85,[11] ·95,[12] ·96,[13] or even ·9875.[14] It is of interest to see how the correlations come out in the cases dealt with in the author's Basis of Marking, already referred to ([10]) where it will be remembered that various schedules for the same scripts were used. Thus, there were 156 Trade Scholarship scripts (in computing for the previous paper only 155 cards were available).

Let us use Schedules ε and ζ. These are connected as follows:

Question.		*I.*	*II.*	*III.*	*IV.*	*V.*	*VI.*	*VII.*	*VIII*
Maximum on Schedule	ε	5	8	10	5	4	4	6	6
	ζ	10	8	5	3	8	6	3	3

From them we find that the value of r is ·953, confirming those previously quoted, and also confirming the general conclusion of Bowley[15]

[9] *J.E.P.*, 1932; 23, 2, 148; *J.E.P.*, 1932, 23, 9, 677.
[10] This *Journal*, 1931, Vol. 1, Part 3, pp. 296-312.
[11] *J.E.P.*, 1930, 21, 5, 384.
[12] *J.E.P.*, 1931, 24, 4, 285; *J.E.P.*, 1930, 21, 2, 145; *J.E.P.*, 1929, 20, 6, 463.
[13] *J.E.P.*, 1931, 22, 9, 702.
[14] *J.E.P.*, 1932, 23, 2, 95.
[15] *Elements of Statistics*, 2nd Edition, 1902, P. S. King, pp. 113, 205.

ors in weights are unimportant and can generally be neglected. er example has recently come under the writer's notice. In a cholarship Examination, after 86 scripts had been marked, it ided to make the schedule slightly more generous. Extra marks, ig three (out of about twenty) for each of four questions, were l on the schedule for stages that would otherwise not score ;. In this case the value of r is ·934. The table is not printed r reasons of space, but it shows that the variation in the two most marked in the middle of the two ranges—the really bad es get 0 on any schedule and the top ones on the old scale have ance of adding more on the new one—to use Godfrey Thomson's there is insufficient headroom. This conclusion is similar to that le in the author's *The Scaling and Totalling of School Marks*.[17]

V.—FLUCTUATION C: INSTABILITY OF THE CANDIDATE.

turn next to consider the fluctuation due primarily to varying s of the candidate. This is one of the features of what has been by Valentine (loc. cit., p. 90), Instability, but as he refers to ty as varying with the examiner or with the type of question, h fluctuations we have suggested other names, it seems necessary the definition (see above). I therefore propose to define Instability uctuation due to varying responses of any one candidate to the muli. In this sense we are concerned with those elements relating n " on the day, disturbance due to a faulty preparation, a bad ı, a late entry, a bad start, a headache, and all the rest of similar These disturbances are probably, though not necessarily, present pronounced degree in oral tests than in written ones. In oral e appearance and manner of the examiner, the antipathies, ies, fears and likings, are all probably large components of the Instability here. Oral and Visual Presentation give different

urally, it is impossible to compare the performances of any one te on two occasions keeping all the factors constant, save only the the mere lapse of time adds to his maturity, etc., and the first pares him, in some degree, for the repeated one later. Between chs there will be different exposures and responses to schooling, emotional lives, different development in various ways, so that didates will progress at different rates. There are cases, however,

oup Tests and Intelligence Quotients. This *Journal*, 1932, 2, 2, 128.
rum of Education, 1924, 2, 1.
E.R., 1928, 18, 5,424.

reported of re-tests after a period of time that indicate that this fluctuation is a very important one. Re-tests on standardized tests give conclusions reported as follows:

After 10 years	r of order ·6	*J.E.P.*, 1934, 25, 2, 158
After 5 years	r of order ·6	*J.E.P.*, 1930, 21, 4, 293
After 3½ years	r = ·83	*J.E.P.*, 1934, 25, 1, 68
After 3± years	r of order ·7	*J.E.P.*, 1928, 19, 4, 260

It seems desirable to check these by one's own experience. The writer recently gave to his pupils, in their ordinary work, practice in "tots," intending to prepare the results as a study of learning and oscillation. The report is not yet worked out, but some of the figures are suitable for our enquiry. Some sixty pupils were divided into twelve equal-capacity sets, and over each of twelve days did one or other of twelve sheets of simple 4 by 4 figure tots, the sets being arranged according to a randomized Latin square. It seems desirable to continue the experiment, so after twelve days the pupils began to work through their cycle again. In consequence, we have, for a number of cases, the scores at intervals of twelve school days (roughly, but not invariably, a fortnight) for each pupil in each test. The pupils worked for two minutes at the sheet and the score was simply the number of digits correct. The pupils marked the answers each day after getting them, and thus knew their progress. Practically, apart from the errors, probably scarce, of faulty marking, the only fluctuations here arising would be (1) that due to the pupil's instability and (2) that due to increased mastery due to learning at various rates. From this we have data which gives a correlation of ·617.

This result is, I think, unexpectedly low, and indicates how very great the instability may be, even in such a routine matter as an objective test in tots given in the ordinary course of secondary school work.

We may note that the other constants of the distributions show the effect of learning and indicate the feature [illegible] in *Progress through a Secondary School* (this *Journal*, 1933, III, 3, 288) that the longer pupils are at school the wider become their differences; educational influences increase natural differences in ability. The constants are:

Test.	*Earlier.*	*Later.*	*Increase.*
Mean Score in Test	17·9	22·9	5·0
Standard Deviation in Test	5·7	6·6	0·9

V.—FLUCTUATION B: UNRELIABILITY OF THE QUESTIONS.

This fluctuation is that caused by the setter choosing questions that fail to give a consistent indication of the ability of the candidate in the topics and syllabus from which they are sampled. Hamilton[19] has laid it down that questions should give what he calls a Good Indication. The term that we, following Spearman, shall use for this fluctuation is Unreliability. If two duplicate forms of test be set, it would be expected that, apart from errors due to other fluctuations, the scores obtained by candidates would be the same on each part: alternatively, if the question had two parts covering the same field the marks should be the same. The reliability of examinations has been tested in each way. Spearman's followers use often what is called the method of split halves, where the scores of the two equal parts of an examination paper are compared. Usually the score of the odd and that of the even questions are compared. The following indicates the type of results that have been found:

Repeated or Duplicate Spelling Tests....	$r = \cdot 90$	*J.E.P.*, 1931, 22, 5, 384
Alternative Tests in Same Material	$r = \cdot 30$ to $\cdot 80$	*J.E.P.*, 1931, 22, 4, 271
Stanford	$r = \cdot 88$	*J.E.R.*, 1932, 26, 4, 295
Short Answers and Multiple Choice on Identical Content	$r = \cdot 78$	*J.E.R.*, 1932, 26, 1, 29.
Alternative Vocab. Tests	$r = \cdot 56$ to $\cdot 85$	*J.E.R.*, 1929, 20, 2, 95

Again, it seems desirable to check these by English experience. Several possibilities arise. In one of the School Certificate Examinations, the mathematics papers are in two parts.

(*a*) Easy questions of a routine type: the essential thing is that the answer should be correct.

(*b*) Questions of greater length and difficulty.

The syllabus is, however, the same for each part. In one such examination, an analysis of 236 scripts gave a value of r as $\cdot 255$—much below those already reported. As the two parts of the examination were testing somewhat different functions, we might expect a somewhat lower result than those reported on standardized short answer objective tests, but in view of the correlations commonly obtained between school subjects, sometimes[20] of order $\cdot 6$ this seems remarkably low.

[19] HAMILTON, E. R.: *The Art of Interrogation*, 1929. (Routledge.)

[20] BURT: *Distribution, etc., of Educational Abilities*, 1916, p. 52; WILSON: This *Journal*, 1933, 3, 1, 73 and 83, 3, 2, 99; these last being on selected material.

A second case was taken from a Junior County Scholarship Examination for a large area. This particular examination has recently been the subject of some investigation, in the course of which the writer had opportunity of finding the correlation between the " odd " and " even " scores in the twenty questions (ten odd, ten even) in the " mental " Arithmetic paper for 150 candidates. The table here gives a value of r of ·480. This is still low, possibly in part by reason of the smallness of the sample and in part of the failure of the questions to discriminate well between the candidates, which together result in a large " hig "[21]; it was noted that some questions were correctly done by practically every one, while several, particularly among the even ones, were generally badly done. We recall that discrimination is best at the 50 per cent level (cf. *Basis of Marking*, loc. cit.)[22]

VI.—FLUCTUATION A: INVALIDITY.

This error arises by reason of the non-representative character of the selection, for examination, of topic and syllabus for the subject as a whole. When we remember that one American worker[23] has listed 13 aims and 109 types of mechanics of first year algebra (i.e., examples designating the process to be used in solution) and that even then we have no real reason to assume that what is here called first year algebra would be recognized as such by teachers of mathematics of another country, epoch or tradition, we realize how difficult is the problem. If this type of fluctuation is absent the examination is said to have perfect validity. But as we have already seen, we can never measure the extent of this fluctuation, which we shall call that due to Invalidity. It is probably large. One worker has reported[24] the correlations between judgments of difficulty and actual difficulty of test items, averaging ·62 for experienced judges, and this seems the best approach to the problem that has been made. But it is clear that the judgment of the best expert on the difficulty of a question, or, alternatively, of its representative nature as a sample of the whole field surveyed, will be a rather faulty guide. Every examiner is aware of the doubt that he has about the real difficulty that the candidate will find with his various questions. In the *J.E.R.* for October, 1929, Vol.120, Part 3, p. 203, there is a report of an enquiry where the workers experimentally determined, by the use of essay type and objective short answer tests, the extent of sampling for a definite passage of prose by either method, but no correlations are given to indicate the validity of either test.

[21] *Brit. Journ. of Psych.*, 1931, 22, 1, 75.
[22] *J.E.P.*, 1929, 20, 7, 493; and 1932, 23, 5, 342.
[23] *J.E.R.*, 1932, 26, 2, 117-119.
[24] *J.E.P.*, 1930, 21, 6, 463.

VII.—THE FLUCTUATIONS JOINTLY.

So far we have endeavoured to consider the fluctuations independently, although, of course, in the numerical illustrations practically all, as previously pointed out, are present simultaneously. Let us summarize them:

A	Invalidity	r of value, say, ·6
B	Unreliability	r of value, say, ·25 to ·5
C	Instability	r of value, say, ·6
D	Weighting Fluctuation	r of value, say, ·95
E	Grading Fluctuation	r of value, say, ·6 to ·9

The values given are only to be regarded as approximations to the actual magnitudes. They may be considerably modified in special ways. Thus E may be reduced by using an objectively marked little-to-write test which at the same time may reduce B if a very large number of short answers are required. On the other hand, a single essay-type answer, or a discourse given verbally, will have these two; and in addition Fluctuation C present in large degree. We may, however, I think, summarize by saying that the chief errors arise in the selection of the questions and on the occasion of the candidate's response to them. The marking is relatively definite compared with these elements. If all coexist, then we shall be fortunate if our examination correlates ·6 with the criterion: it will be a remarkably good examination where the correlation is ·8 with the criterion, and it will be one altogether exceptional and beyond the reach of ordinary practice if the correlation were ·95.

VIII.—SUMMARY.

(1) A detailed review of the different causes of non-perfect correlation between an examination and its criterion is made and

(2) the conclusion is reached that it is only a remarkably good examination where the correlation between an examination and its criterion attains the value ·8.

IX.—NOTE: A COROLLARY OF THESE EFFECTS.

Let us consider two examinations of the same 1,000 candidates. Let us mark the scripts to a maximum of 100 in each paper. Then it would be quite in accordance with experience to have an average mark of about 50 and to find in any examination that about half of the candidates have scores between 40 and 60 (see, e.g., the marks accumulated all through a term on various tests, etc., in *Progress through a Secondary*

School.) It would be, as seen above, an altogether exceptional case for the correlation between the two examinations to be ·95, but we shall assume that we have this degree of perfection and see what happens in this case in one respect. The attached table has been calculated theoretically from these and other reasonable assumptions, for $r=\cdot 95$, $n=1000$, mean=50, and $s.d.=15$, approx., from Pearson's Tables of Normal Bivariate Surface[25]. We notice that for a first examination mark of, say, between 57½ and 65 that there are 150 cases. Of these there are 80, or just over one half, that have their second examination mark lying in the same range. Of the rest, there are 42 with a less mark and 28 with a greater one. This is in accordance with experience: it would be an exceptional examination if over one half of the candidates at any particular level had within 5 per cent of their first mark in the second one. But this is what happens if $r=\cdot 95$. It is presumably an interpretation of this nature that has to be given to Edgeworth's estimate (page 183) of the fluctuation E, where, as we have seen, the intercorrelations run rather high. The preponderance of these 57½ to 65 candidates who score less the second time over those who score more is of course the usual effect of regression, i.e., it is necessary for any value of r less than 1. There are several other points that arise in connection with the study of this table, but these must be reserved for another paper.

Mark in Second Examination.	*Mark in First Examination.*												
	5–	12½–	20–	27½–	35–	42½–	50–	57½–	65–	72½–	80–	87½–	*Total.*
5–	4	2	—	—	—	—	—	—	—	—	—	—	6
12½–	2	8	6	1	—	—	—	—	—	—	—	—	17
20–	—	6	23	14	1	—	—	—	—	—	—	—	44
27½–	—	1	14	48	27	2	—	—	—	—	—	—	92
35–	—	—	1	27	80	39	3	—	—	—	—	—	150
42½–	—	—	—	2	39	102	45	3	—	—	—	—	191
50–	—	—	—	—	3	45	102	39	2	—	—	—	191
57½	—	—	—	—	—	3	39	80	27	1	—	—	150
65–	—	—	—	—	—	—	2	27	48	14	1	—	92
72½	—	—	—	—	—	—	—	1	14	23	6	—	44
80–	—	—	—	—	—	—	—	—	1	6	8	2	17
87½–	—	—	—	—	—	—	—	—	—	—	2	4	6
Total	6	17	44	92	150	191	191	150	92	44	17	6	1000

[25] KARL PEARSON: *Tables for Statisticians and Biometricians*, Part II., 1931. (Biometric Lab., U.C.L.,)

RÉSUMÉ.

LES IMPERFECTIONS INÉVITABLES DE TOUT EXAMEN.

L'on examine les étapes différentes de tout examen, et au moyen de cette analyse, on découvre les cinq sources principales de l'erreur, qui causent des fluctuations dans la note obtenue, et ainsi la corrélation imparfaite entre le resultat final et le critère inconnu et inconnaissable.

On calcule l'étendue de l'erreur due à chacune de ces causes, en partie par un coup d'œil sur la littérature, en partie par des matériaux originaux. Si nous indiquons la corrélation d'un résultat avec le critère au moyen du signe " r " alors, ayant isolé autant que possible les diverses erreurs, nous en concluons que " r " possède les valeurs suivantes :

Variation A. Invalidité—.6 environ.
Variation B. Imperfection des questions—mettons de .5 à .25.
Variation C. Instabilité du candidat—.6 environ.
Variation D. Fluctuation dans l'importance des questions—mettons .95.
Variation E. Variation dans le classement—mettons .6 à .9.

On arrive à la conclusion que les erreurs principales sont dues au choix des questions et aux réponses que fournissent les candidats. En plus ce n'est que dans un examen superlativement bon que la corrélation entre l'examen et son critère atteint la valeur de .8.

ZUSAMMENFASSUNG.

DIE UNAUSBLEIBLICHEN UNVOLLKOMMENHEITEN EINES EXAMENS.

Die verschiedenen Abschnitte eines Examens werden betrachtet, und aus der Analyse werden fünf Hauptquellen von Irrtümern herausgesucht, die Schwankungen in den Nummern und damit auch eine ganz unvollständige Korrelation des Endergebnisses mit dem unbekannten und dem unerkennbaren Kriterium veranlassen.

Der Umfang des Irrtums, der sich aus jeder dieser Ursachen ergibt, wird teilweise durch eine Übersicht über das schon Geschriebene und teilweise durch ursprüngliche Gegebenheiten abgeschätzt. Wenn wir die Korrelation eines Ergebnisses mit dem Kriterium durch das Produktmoment " r " messen, dann schliessen wir, wenn die verschiedenen Irrtümer so weit wie möglich isoliert sind, dass " r " folgende Werte hat :

Schwankung A. Ungültigkeit-etwa 0,6.
Do. B. Unzuverlässigkeit der Fragen-von etwa 0,25 bis 0,5.
Do. C. Unbeständigkeit des Prüflings-etwa 0,6.
Do. D. Schwankung bei der Zuteilung des Stoffes-etwa 0,95.
Do. E. Schwankung nach Stufen-etwa 0,6 bis 0,9.

Man kommt zu dem Ergebnis, dass die Hauptirrtümer aus der Auswahl der Fragen und den darauf von den Kandidaten gegebenen Antworten entstehen. Ausserdem gibt es nur ein bemerkenswert gutes Examen, wo die Korrelation zwischen einem Examen und seinem Kriterium den Wert 0,8 erreicht.

GROUP FACTORS IN SCHOOL SUBJECTS.

By GODFREY H. THOMSON
(*Moray House, University of Edinburgh*).

I.—*Object of this note.*
II.—*The Protean nature of factor patterns.*
III.—*Limitations to this Protean nature.*

I.—Object of this note.

The present note is instigated by a controversy between Mr. J. H. Wilson and Mr. W. G. Emmett, the authors of two papers in the February number of this *Journal*,[1] which refer to an earlier paper by the first named, in which he found factor patterns for various abilities involved in a School Certificate Examination.[2] I wish to call attention to the fact, which I have repeatedly emphasized during the last two decades, that an infinite number of factor patterns can be made to explain any set of correlations; and to show the bearing of this on the present controversy.

The question at issue is stated very clearly in Mr. Emmett's introduction. Mr. Wilson found that the correlations between History, Geography, French, and Arithmetic (for brevity I shall confine myself to this group) gave zero tetrad-differences, and held that these abilities were therefore determined by one general factor and by specific factors, no group factors being present. Mr. Emmett exclaims that this is a most surprising result, for it is usually held that scholastic performance is determined by many independent influences, such as those in a long list which he prints on pages 94 and 95 of his paper.

I am not here concerned with the arguments which Mr. Emmett then enters upon, wherein he endeavours to show reasons for thinking that the tetrad-differences were possibly not really zero. I agree with many, perhaps all, of those arguments, especially with his statement that if a tetrad-difference t is not significantly different from zero it is also not significantly different from $2t$. But these matters do not concern me at present. Let us grant that the tetrad-differences are zero. It still remains perfectly possible for Mr. Emmett to be right about the large number of group factors.

[1] *Brit. Journ. of Educ. Psychol.*, 1935, V (1), pp. 93 and 101.
[2] *Brit. Journ. of Educ. Psychol.*, 1933, III (1) and (2), pp. 71-108.

II.—THE PROTEAN NATURE OF FACTOR PATTERNS.

Any set of correlation coefficients can be described by an infinite number of factor patterns. To illustrate this I shall use the example quoted above from Mr. Wilson's paper; the correlations for these four subjects, taken from his Table I (page 73, 1933), were:

	(1)	(2)	(3)	(4)
(1) History	.	·564	·411	·364
(2) Geography	·564	.	·381	·439
(3) French	·411	·381	.	·369
(4) Arithmetic	·364	·439	·369	.

Mr. Wilson (after taking a number of matters into consideration) arrives at a factor pattern given in the upper table on his page 80 (1933) which for our present purposes is equivalent to the equations:

$$z_1 = \cdot 686\, g + \cdot 728\, s_1$$

$$z_2 = \cdot 756\, g + \cdot 655\, s_2$$

$$z_3 = \cdot 575\, g + \cdot 818\, s_3$$

$$z_4 = \cdot 579\, g + \cdot 815\, s_4$$

wherein the z's are standardized scores in the four subjects, g is a general factor and the s's are specific factors, the factors being also in standard measure. These equations give the correlations of Mr. Wilson's Table IXA (p. 80, 1933) namely:

	(1)	(2)	(3)	(4)
(1) History	.	·518	·395	·396
(2) Geography	·518	.	·435	·438
(3) French	·395	·435	.	·333
(4) Arithmetic	·396	·438	·333	.

These values Mr. Wilson accepts as a sufficiently good fit to the observed values given above, and I shall take this as agreed: for it is immaterial to my argument, which is that these identical correlations given just above (or any others accepted as a good fit, or the actual

observed values) can be produced by millions of different factor patterns, among which it will be a remarkable thing if Mr. Emmett cannot find one to his liking. We have an embarrassing amount of freedom, mathematically, in making factor patterns. The choice between them must be left to the psychologist or the educationist, who is not in the slightest degree compelled to accept, for example, the absence of group factors merely because, as here, the tetrad-differences are zero. If the tetrad-differences are zero, group factors as an explanation can be dispensed with if we wish : but we are also free to keep them if we wish. Here for example is a factor pattern which has all kinds of group factors in it, yet gives exactly the above correlations :

$$z_1 = \cdot 251a + \cdot 354b + \cdot 357d + \cdot 218e + \cdot 503f + \cdot 310m + \cdot 311n + \cdot 436s$$

$$z_2 = \cdot 228a + \cdot 321b + \cdot 324d + \cdot 242c + \cdot 456f + \cdot 341h + \cdot 349l + \cdot 491t$$

$$z_3 = \cdot 299a + \cdot 422b + \cdot 260e + \cdot 318c + \cdot 276k + \cdot 448h + \cdot 366n + \cdot 388u$$

$$z_4 = \cdot 298a + \cdot 423d + \cdot 254e + \cdot 317c + \cdot 274k + \cdot 367m + \cdot 450l + \cdot 390v$$

Here the factor a is present in all four subjects (it is not Spearman's g) ; b, c, d, and e are present in three subjects each ; f, h, k, l, m, and n are present in two subjects each ; s, t, u, v, are each peculiar to one subject. Everything is in standard measure. The correlation between two variates is found by summing the products of corresponding coefficients, thus for example :

$$r_{12} = \left.\begin{array}{l} \cdot 251 \times \cdot 228 \\ + \cdot 354 \times \cdot 321 \\ + \cdot 357 \times \cdot 324 \\ + \cdot 503 \times \cdot 456 \end{array}\right\} = \cdot 518$$

as required. (It comes to ·516 if checked, but that is because I have only printed three decimal places.) Similarly the other correlations are those we require. The above factor pattern is of especial interest because it is explicable by the hypothesis that these four school subjects depend on a lot of small influences and that each separate subject depends on a random sample of these—almost, one might say, the absence of any hypothesis, for zero tetrad-differences are the most likely thing to occur among correlation coefficients if nothing is actually preventing it.

Perhaps the reader however does not like this particular factor pattern. He thinks it most improbable, perhaps, that there should be a factor e common to History, French, and Arithmetic, but absent from Geography ; and unlikely too that there should be a factor c absent

from History, but common to the other three. Well, in that case he will prefer the following, wherein *e* and *c* are missing :

$$z_1 = \cdot 370a + \cdot 230b + \cdot 235d + \cdot 570f + \cdot 378m + \cdot 374n + \cdot 380s$$

$$z_2 = \cdot 336a + \cdot 210b + \cdot 214d + \cdot 517f + \cdot 421h + \cdot 423l + \cdot 419t$$

$$z_3 = \cdot 440a + \cdot 275b + \cdot 551h + \cdot 377k + \cdot 447n + \cdot 291u$$

$$z_4 = \cdot 437a + \cdot 278d + \cdot 374k + \cdot 552l + \cdot 447m + \cdot 294v$$

Nor is this the only factor pattern (by several millions) which leaves out *c* and *e*.

If another reader dislikes the factor *a* which is common to all the subjects, I will abolish it. If another dislikes the special link *k* which joins French and Arithmetic, I will abolish that. Or here is a pattern which abolishes both :

$$z_1 = \cdot 378b + \cdot 438d + \cdot 222e + \cdot 486f + \cdot 310m + \cdot 375n + \cdot 381s$$

$$z_1 = \cdot 343b + \cdot 395c + \cdot 397d + \cdot 441f + \cdot 244h + \cdot 151l + \cdot 540t$$

$$z_3 = \cdot 450b + \cdot 519c + \cdot 258e + \cdot 321h + \cdot 447n + \cdot 400u$$

$$z_4 = \cdot 516c + \cdot 519d + \cdot 256e + \cdot 197l + \cdot 366m + \cdot 477v$$

And so one can go on *ad infinitum*. I have used only the fifteen factors *a*, *b*, *c*, *d*, *e*, *f*, *h*, *k*, *l*, *m*, *n*, *s*, *t*, *u*, *v*, and only plus signs. But this was only for convenience of calculation. We can have many general factors, not only *a* ; or many links joining History and Geography, not merely *f*. The weights may be positive in one subject and negative in another—for example patriotic fervour might urge a boy to study History (British) but give him a distaste for foreign languages ; or a gift of predominantly auditory imagery might help French but hinder Arithmetic. But the fact that a factor can be introduced mathematically with plus weight in French and a negative weight in Arithmetic is no proof that there exists any actual influence helping the one and hindering the other. Factor analyses, in short, are descriptive merely, not evidences of causation ; and they are Protean.

III.—LIMITATIONS TO THIS PROTEAN NATURE.

Of course with a given matrix of correlations one cannot produce absolutely *any* factor analysis. If the correlations are large enough, for example, one cannot entirely abolish general factors, though one can modify them between wide limits. If certain relationships exist between the correlation-coefficients one cannot entirely abolish factors linking

three (say) of the subjects. The important criterion in this respect is the determinant :

$$\begin{vmatrix} k & r_{12} & r_{13} & r_{14} & \cdot & r_{1n} \\ r_{12} & k & r_{23} & r_{24} & \cdot & r_{2n} \\ r_{13} & r_{23} & k & r_{34} & \cdot & r_{3n} \\ r_{14} & r_{24} & r_{34} & k & \cdot & r_{4n} \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ r_{1n} & r_{2n} & r_{3n} & r_{4n} & \cdot & k \end{vmatrix}$$

where k has to be given various integral values. If k is put equal to $+1$, this determinant must be positive or zero, otherwise no factor analysis at all is possible and the correlations cannot coexist. If k is put equal to -1, and the above determinant is then zero or has the sign $(-)^n$, all factors except specifics and duals can be abolished ; and so on.

Geometrically, all this means that if we measure uncorrelated factors along a system of rectangular axes in the proper units, and represent each test by a radius vector through the origin, we can then rotate the rectangular system of axes as we please, including rotations into higher dimensions of hyperspace ; while if we stop the rotation at a point where some of the axes are at right angles to the space defined by the radii vectores, these axes are unnecessary.

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RÉSUMÉ.

LES FACTEURS GROUPÉS DANS LES BRANCHES SCOLAIRES.

Cette note résulte d'une dispute entre M. Wilson et M. Emmett, auteurs d'articles publiés dans ce journal en 1933 et en 1935. Wilson avait découvert que les corrélations entre certains groupes de branches scolaires donnaient des différences " tetrad " zéro, et il en a conclu que chacun de ces groupes s'expliquait par un facteur général et plusieurs facteurs spécifiques. Emmett, de l'autre côté, maintenait que de tels accomplissements scolaires étaient déterminés par un nombre d'influences indépendantes. Thomson fait remarquer ici que l'on peut arranger d'innombrables dessins de facteurs pour chaque groupe de corrélations, et que pas un seul de ces dessins n'est une preuve de l'existence réelle de ces " facteurs " qui ne sont que des variables mathématiques. Il existe, il est vrai, certaines bornes à la liberté avec laquelle on peut arranger ces dessins de facteurs, mais ces bornes laissent néanmoins des possibilités étendues de variation. On se rapporte aux articles originaux de cet auteur et d'autres dans lesquels ces questions sont traitées d'une façon plus technique.

ZUSAMMENFASSUNG.

GRUPPENFAKTOREN BEI SCHULFÄCHERN.

Diese Bemerkungen entstehen aus einer Meinungsverschiedenheit zwischen Herrn Wilson und Herrn Emmett, den Verfassern von Abhandlungen in dieser Zeitschrift im Jahre 1933 und 1935. Wilson hatte gefunden, dass die Korrelationen zwischen gewissen Gruppen von Schulfächern Tetraddifferenzen mit Nullwert ergaben, und war daher der Meinung, dass jede von diesen Gruppen durch einen Generalfaktor und spezifische Faktoren erklärbar sei. Emmett andererseits nahm an, dass solche Schulleistungen durch viele unabhängige Einflüsse bestimmt würden. Thomson weist hier darauf hin, dass unzählige Faktorenschemata für jede Korrelationsgruppe gemacht werden können und dass keins von diesen Faktorenschemata ein Beweis für die tatsächliche Existenz der " Faktoren " ist, die lediglich mathematische Variabeln sind. Gewisse Grenzen bestehen tatsächlich in der Freiheit, mit welcher Faktorenschemata gemacht werden können, aber diese Grenzen lassen trotzdem grosse Möglichkeiten der Variation zu. Man weist auf die Originalabhandlungen des Verfassers und anderer hin, in welchen diese Fragen eingehender besprochen werden.

EGOTISM AND MORALITY.

By HELEN WODEHOUSE.

I.—*Introduction: A new discussion of egotism.*
II.—*Some comments and questions:*
(*a*) *Semi-serious or subordinated egotism.*
(*b*) *Assertion versus self-assertion.*
(*c*) *Moral education, ambition, and vocation.*
III.—*Summary of results and conclusions.*

I.—Introduction: A new discussion of egotism.

Much of my Easter vacation this year was spent in the study of an unusual first book: *The Ethics of Power, or The Problem of Evil*, by Philip Leon (George Allen and Unwin, 1935, 10s. 6d.). The Editor of this Journal gives me leave to introduce the book to readers who might otherwise miss it, and to set down some thoughts which, in confirmation or in questioning, arose out of my reading it.

The author has attempted "to describe concretely, with illustrations from life and literature, the nature and manifestations of the lust for power, position, greatness, or absoluteness." In doing this, he holds that he is grappling with a question which should stand in the forefront of ethics, "Why are we bad or do evil?" When Plato distinguished three parts in man's nature, he thought of the middle part, the spirited or irascible element, as normally the ally of genuine moral vision; and took the lowest or appetitive part to be most often the villain of the piece. His worst type of man, the tyrant, he said was hounded on to power, tyranny, and oppression by a mad bodily lust. "And yet Plato was intimate with at least one tyrant and he might have known from the history of Greece that, whatever might be the case with those who succeeded to an established tyranny, the men who had had to win it and establish it had not been the slaves of bodily lust, but lovers of power, honour, supremacy." Plato might have seen, as Aristotle and the great tragedians saw, that the central malady of life is not any bodily or non-bodily appetition, but egotism—*hubris*.

Mr. Leon keeps the name egotism for this kind of evil, and contrasts it with egoism, a term which he reserves for the appetitive life and for the naive selfishness which comes when this is left to manage itself. The usage has some awkwardness, as he himself notes, and in this paper

I shall avoid the term egoism and speak only of appetition.[1] Appetitions (following Plato's widest use) are to include " all conscious desires or dim conations . . . impulses, urges, tendencies . . . " the fulfilment of which is some lived *process*, whether that process be eating and drinking or bodily exercise, or the activity of planning and organizing, or the study of mathematics. They make up all the naive material on which the moral life must be based (p. 244-5). " The appetitional life is not only included in the genuinely moral life, but it is a result or incident of the latter that the former becomes more abundant . . . Egotism, however, . . . can in no shape or form, in none of its aspects or expressions, be included in that life. When it seems to be included in the shape of ' noble ' pride, ambition, scorn, etc., as in pharasaism, the case is not one of morality including egotism but of egotism distorting and limiting morality." For egotism is morality's opposite and rival. Both stand above appetition ; they desire not mere processes but structures or situations ; and these of opposite kinds. The moral *nisus* is directed towards the situation which embodies Goodness, and goodness means, above all, a right relation among persons ; it is a situation of at-oneness, communication and communicability (23), " a kind of intimacy between person and person " (201). The egotist must have separateness or supremacy, soleness or allness. Other persons are means to his ends, in so far as he allows himself to have ends, for indeed " the pure or Uranian egotist is too proud to be anything " (94-5).[2] " The position which *par excellence* he loves, or is concerned about, is his being the Absolute or the All, or vulgarly speaking, ' It.' "

The egotist must have, therefore (95-6), " the *nisus* to maintain that consciousness unchanged, . . . to resist in fact all reality, since all reality is against it . . . It is the impulse *not* to know oneself as not the Absolute, and therefore the impulse not to know either oneself or the not-self . . . *He wills that he is the Absolute or that black is white.*"

This is the abstract analysis, but Mr. Leon, as he promised, gives concrete examples richly. He draws out the contrast, for instance, of the naive self-love of the appetitive man as shown in the degeneration of Tito Melema in " Romola," with the true egotism of Sir Willoughby Patterne. The self-love of the one would work out in much the same life in any surroundings, while the *amour-propre* of the other might choose quite different external conduct in a world where a different currency

[1] The similarity of " egoism " and " egotism " leads to misprints ; an important and confusing one in the heading of p. 84, and one more easily discerned near the bottom of p. 185.

[2] A good illustration could be found, of this and other points, in the account which Wordsworth's Solitary gives of himself in " The Excursion."

passed. "He might even lay down his life, provided that thus only could he . . . regard himself and be regarded as superior or supreme."

Throughout the book the author broods on the nature of true morality, adding a touch here and a touch there to bring out its difference from the working of that other *nisus* which for him is not the flesh but the very devil. The attitude of blaming or condemning, for instance, he urges is always of the nature of egotism and not of goodness, because it is a turning away in spirit, the raising of a barrier or wall (pp. 100-1). "Substitute a turning to, and an attempt to remove all barriers, and you have nothing left that can be called culpatory." In an admirable discussion of the function of punishment (267-275) he claims that we can see most clearly, in the relation of moral punishment to revenge, "that genuine morality arises not by evolution from egotism, but by revolution against it and as a substitution for it, being consequential upon its utter breakdown." "The conversion of the criminal is so difficult because it is not different from the conversion needed by the fanatic or idealist, by the high-minded Inquisitor, by a Plato, Paul, Augustine, Nietzsche." The writer tells us (p. 21) that he is "a simple, ignorant heathen, echoing the Bible merely as he echoes Plato, with no intention to support any theology," but he recognizes that the Judaeo-Christian tradition has been the firmest in enunciating the only true morality, "a turning away from Greatness or from the heroic ideal to Goodness"; and his contrast between remorse and repentance (203-5) is in the true line of Christian teaching. "In a moment of genuinely moral living a man . . . is not concerned with his own worth or his place in a scale of worth, he has no 'ideal of himself' to 'realise'; he knows, and he takes it for granted, that he is a 'miserable sinner' and his repentance, in spite of all precedent pain, is release and joy."

"The reader will best understand what we are driving at," writes Mr. Leon elsewhere, "if he reflects all the time on the utter moral absurdity of Milton's *Paradise Regained*. The root of the absurdity lies in representing Jesus (the moral man) as a seeker after a kind of super-greatness, super-merit, super-glory . . . He is represented (partly by Satan, partly by Milton himself) through inappropriate notions, as inappropriate as would be those of geometry." The same inappropriateness is found in Professor McDougall's teaching that the self-regarding sentiment is the firm foundation of morality;—that "moral advance consists . . . in the development of the self-regarding sentiment and in the improvement and refinement of the 'gallery' before which we display ourselves . . ." Mr. Leon quotes this from the twenty-first edition of *Social Psychology*, and remarks, "In case it has not yet been

made clear what is here meant by egotism, we wish to assert that all that is described in these pages of McDougall's is egotism, even though it should, as in the case McDougall imagines, lead the egotist to risk his life in the teeth of public disapproval in order to save a child from burning."

McDougall in one of his later books defends his view as a naturalistic explanation of morality for which no one since he put it forward has proposed a substitute; and some may think that no weight is carried by its being condemned at the hands of a writer who rejects naturalistic ethics as such. I think Mr. Leon would condemn some of my own opinions as naturalistic, and I should like therefore to say how heartily I agree with him in opposing McDougall's account when it is given (as McDougall gives it) as final. Possibly I might allow it more place than Mr. Leon does, if it were given as describing one factor which, in strict subordination, may work in the service of morality. I hope my reasons may become clearer, by implication, as I go on.

II.—SOME COMMENTS AND QUESTIONS.

The rest of the present paper may be summed up as a kind of "Yes, but . . ." Mr. Leon's book is stimulating in the true sense of the term, setting the reader's mind at work with further thoughts of its own. Most of the thought in my own case has been warmly "Yes." The "Yes" lies in the background of any disagreement, and I have never been sure that any disagreement exists, for *The Ethics of Power* is a big book and a discursive one, and the qualifications that I seek may always be lurking somewhere in its pages. I would rather say that certain discomforts or puzzles are left in my mind, and that I would welcome Mr. Leon's help with them in his next piece of writing, or his stressing of their solution if that solution is already contained in this book.

I start from the position which he makes quite clear, that in describing egotism he is describing an abstraction.

> "If we have spoken most of the time of the genuinely moral man on the one hand and of the egotist on the other, we have done so for the sake of simplicity of exposition; we intended no more than to contrast the genuinely moral life on the one hand with the egotistic life on the other, or rather a moment or phase of the one with a moment or phase of the other." (206).

But I should claim further that his egotist is much *more* the personification of an abstraction than is the moral man. The moral man, for instance (pp. 93-4), retains all the equipment of naive desires; the egotist

must have none, he loves neither eating nor drinking but "just himself." Yet he is not quite a simple and unitary abstraction. We are given vividly-coloured pictures, not only diagrams or even line drawings, and though the details in the pictures group well, they might not always be inseparable.

In these circumstances, the question that arises in my mind is something like this: Clearly the egotist within us must never take control, yet might not he, or some version of him, sometimes be allowed a subordinate place with a wiser and watchful background? Or again there are certain desires and procedures (I will particularize presently) which in some respects are rather like egotism;—may we have leave to count them innocent, as appetitions are innocent? Mr. Leon says that appetitions aim at processes and that egotism and morality, on a different level from these, are *contrary* ways of aiming at *situations*. Is the classification exhaustive, or are there possibilities lying between the guilt of egotism and the fulness of morality, as the term "contrary" might suggest? I have no wish to cavil about terminology; I only wish that what may be innocent should not be swept away.

(*a*) *Semi-serious or Subordinated Egotism.*

Let me take some concrete cases which suggest such questions, and begin by considering a tennis tournament.

Within the game, we have exactly the attitude which in this book is classed as typically evil. We have defiance and opposition, ambition and competition and warfare; the quest for position and for getting the better of the other man. We co-operate indeed with our partner if we have one, and a fully co-operative game of another kind is possible; two players may try to keep up a shuttlecock as long as possible between them (though even then they are competing with gravitation). But nobody maintains that the difference between this and singles-tennis spans the gulf between virtue and vice. Tennis and shuttlecock alike are counted innocent for quite another reason;—their subordination to a background that knows all about them.

In a competitive game, a piece of egotistical behaviour (individual or corporate) is brought into the foreground and made fully conscious, while in the background we do *not* absolutize it. The ego plays at being It, while knowing quite clearly that he is not It. The arbitrary currency involves no lie but a mutual understanding, and it would be shocking if either player began to be unselfish instead of doing his best to win. It is the latter course in this case that belongs to the true morality; "a keeping of trust or of communication or communicability between

himself as a person and Jones as a person, a maintaining of the relation of at-oneness" (Leon, p. 293). To lapse into unselfishness would be almost as bad as lapsing into anger (not quite as bad, of course). The first would mean losing the foreground of the right situation; the second that its background was lost.

Where the game is played properly, we said, a piece of egotistical behaviour is brought into the foreground and made fully conscious. I understand that sometimes a good teacher of the piano will make a pupil repeat an inappropriate bit of his performance deliberately and in an exaggerated form, thus bringing it into full consciousness against a background of detachment. On the games field and tennis court young people are encouraged to practise a quasi-egotism; deliberate, exaggerated, but subordinated. May it not be a useful means, as we have generally believed, for bringing egotism itself further under their own control, or rather under the control of Goodness? Along with games, I would reckon much of the competition and ambition involved in school work. In all semi-serious competition the "semi" is highly important, for it brings in the human power of living upon two levels simultaneously; the achievement of keeping a mind above the mind; irony and a sense of humour. Where we carry games and competitive work to a degree at which they choke the background and fill the sky, and the sense of humour disappears in staff and pupils alike, I undertake no defence of the result.

(*b*) *Assertion versus Self-assertion.*

Turn now to a different point, introduced by a passage with which I agree.

> "The egotistic life . . . is not made up of, and does not spring from, many separate instincts or impulses or habits; it springs from ambition or egotistic self-love which, like the moral *nisus*, is one; hence it is wrong to speak, as do many psychologists, of many different and independent egotistic instincts or impulses (the instinct of self-abasement and the instinct of self-assertion, the instinct of pugnacity, the instinct of destruction, the instinct of self-display, etc.)—these being . . . merely the different expressions, evoked by different circumstances, of one and the same attitude." (p. 208).

Against the terminology here criticized, good authorities have brought the further criticism that self-abasement and self-assertion are not suitable names for instincts at all, and have proposed instead such names as the instinct of submission or following a lead, and the instinct to give a lead. If we accept this idea, we seem to have a positive content dis-

infected, as it were, from egotism, or released from the limitation or the twist which egotism gives. This impulse-content can be used in the promotion of other situations than that of our own supremacy. We can assert or display, or be pugnacious on behalf of, something which is not our empty self. This doctrine fits quite well, I think, with Mr. Leon's excellent discussion of patriotism (pp. 216-18). "If we say that in the genuinely moral life patriotism would vanish, we do not mean that anything positive would be lost; only the limits or the walls would vanish, and the imprisoned spirit would be liberated." "We have never admitted that egotism creates anything. It merely arrests, truncates, immobilises."

I wish to import this conception of disinfection, or untwisting, or unwalling, into an earlier part of the book. We are dealing, let us say, with the Public School Spirit.

> "The Uranian's absolutizing consists of absolute separation or exclusion, and the absolute refusal to identify himself with anything. The earthly egotist does his absolutizing . . . partly by separation, partly by identification. I identify myself with a person or a group of persons . . . or a class of things (a friend, a country, a social class . . . rules of action or principles) when . . . I will that it is I. I adopt or choose it as mine or myself . . . It is what I 'stand for' or represent." (97).

While granting much of what Mr. Leon goes on to say of these "laudatory" attitudes and the evils they may bring, I yet feel that careful distinction is greatly needed.[1] When we choose or find something to admire or uphold, in the ordinary sense of the words, surely the choice in itself may be made sincerely *sub specie boni*, and there need be no illusion or distortion in making it. There arises then a theoretically separate question;—the arrangement of the stress or emphasis in the situation, or the placing of its centre of gravity. So far as we put the stress on our self, and wear the chosen good as an ornament, and use it as an additional ground for disdaining those who have it not, so far we twist everything into egotism. But so far as we put the stress upon the thing chosen, and attach ourselves to it as supporters in good faith, surely there need be no twisting. It is *this* kind of attachment that the Uranian egotist must always refuse; and if the earthly egotist undertakes it he is lapsing from his egotism.

Most of our actual attachments will have elements of both kinds. It is not a matter of the presence or absence of emotion and conation;—

[1] And that the relevant distinction is somewhat obscured by what is said on pp. 97-9 of the presence or absence of emotion.

these, with differing causes and conditions, may attend on either aspect;—we may thrill with pride at being lifted above the common herd, or, without that taint, our hearts may be warmed by the company of what we see as good. Again, I should claim that within the wall of a group-egotism there may exist much genuine morality amongst the members of the group, which only twists up into egotism when they turn towards the world outside. If we condemn as a whole every piece of moral tissue which has this liability to curl up at the edge, what can survive in the fabric of the whole historic world?

Mr. Leon teaches that the culpatory attitude is essentially egotistic and that the laudatory attitude matches it. It is helpful to introduce, as he does, the unusual word "lauding" to indicate the kind of attachment which keeps the centre of gravity inside the self. But he alarms me by sweeping up the long string of good words he enumerates on page 97:—"worshipping, venerating or reverencing, approving, respecting, praising, honouring, valuing, esteeming, prizing, admiring." We cannot spare so many words, and it is very important in practice to arrive at delicate and accurate distinctions if possible; for so many attacks on corporate egotism fail because the group in question feel that the attack is falling undiscriminatingly on something which they know is good. When we have *disinfected* admiring and honouring,—freeing them from the twist, or purifying them from the alloy, of possessive boasting, and purifying them from the harshness of contrasted disparagement and from the tedium of arrangement-in-order-of-merit, I urge that there is something left which it is indispensable to keep.

In this section I have made most use of the idea of disinfection, but the previous metaphor of keeping a background could also be used. I would add a few words here about Fanaticism;—the loss of background which leads to the absolutizing of a small and partial good. The language is mine and not Mr. Leon's, but I hope it may serve. Mr. Leon's treatment does not convince me that a fanatic must always be an egotist, even with the qualifications which he gives.

> "We do not mean to assert that a Brand, a Bolshevik, a Nazi, an Inquisitor, is not an idealist. He is this, but in his idealism lies his sin. Nor is his ideal always merely his *own* victory or supremacy; it may be that of a collectivity, institution or doctrine, with which he has identified himself. For that ideal, we do not deny, he will sacrifice his comfort and even his life. But we have said that every egotist . . . will do this . . . Let but death be victory (glory) or symbolical of victory, and it has no sting . . ." (pp. 263-4.)

The fanatic is in a position where egotism is an easy drug or stimulant, and the *bullying* fanatic can hardly avoid the aggressiveness of one

personality attacking another. But need everyone be an egotist who stands passionately upon one pin-point of the truth? He is absolutizing something which is not the Absolute, but to give the name egotism on this account is to assume that there can be no cause of such absolutizing except the connection with the ego. May there not be many alternative causes, as there are many causes of appetitive fixation? The ego then, forced into attachment to the thing fixated, is yielding to its importance but need not appropriate that importance. One possible instance might be that of a statesman (public or private) obsessed by the importance of security.[1] Another instance might be found in the experience of endeavouring under sudden stress to cling to Goodness, and almost consciously clinging to a partial version, a half-blind loyalty, as the best we can do:—"I *must* be honest." This I would urge is definitely a true, though ragged, morality.

(*c*) *Moral Education, Ambition, and Vocation.*

My final section must deal with moral education. As I granted the bad results of an excessive or background-obliterating use of competition, so I grant to Mr. Leon the bad results of mis-use of praise and blame (p. 181); in particular, I would say, of the excessive use of blame, and of the wrong tone in either. I agree that moral rules and particular virtues are apt to become petrifacts (pp. 298-9), though, as I implied just now, I am not convinced that the petrifacts need be egotistic. I agree (p. 299 note) that on the whole "we do not really train children by inculcating general rules, we make them attend to individual situations and infect them with a spirit." Nevertheless, I wish to claim that there is still a place, especially in childhood and youth, for innocent making-a-point-of, and innocent ambitions, and even, carefully qualified, a place for innocent complacencies.

"The moral life," writes Mr. Leon, "is the purely objective life; the genuinely moral man is not concerned even with the question whether *he* is moral or good or objective, whether *he* is non-egotistic or saved, whether *he* is doing right, but only with the question whether the right is being done." The description chimes well with the account of herself set down by St. Teresa at the age of sixty-five:—"The acts and desires of virtue do not seem to have the force they used to have, for although they are great, the wish that the will of God may be done, as well as that which may be more for His glory, are greater."[2] Yet, as a walking-

[1] I would class this with appetition, but it seems directed towards a situation rather than a process.

[2] Letter to the Bishop of Osma, 1580. (Coleridge III, 172).

stick may help a hill climber, and as holding to the furniture may help a child learning to walk, I suggest that a lower factor *under control* may help, at more than one stage, our power to walk with the highest. If we lose control of a walking-stick we may fall over it, but it has other qualities.

I remember very clearly an occasion at eight years old, and another at twenty-four, when I was the witness of a spontaneously generous and chivalrous bit of behaviour. My conscious reaction was, "This is right; this is beautiful"; and then later, "I should like to be the kind of person that would do this." I still maintain that this attitude had much more than egotism in it; much more than possessive appropriation and wanting to wear the quality as an ornament. The stress was on the quality or the behaviour;—"Let that *be*, and let me be one who be's it." There was a factor which one can hardly refuse to call ambition, yet I believe it was innocent and helpful. May we not in grown-up life, reading such moving and subtle descriptions as Mr. Leon gives us of the nature in tune with goodness, say here and there, "I should like to be like that?"

Complacencies are harder to defend than ambitions. We are uneasy when a grown-up person prides himself on something, counting himself to have attained. But we are more uneasy the higher the matter concerned;—it is more risky to linger on the thought "I have preached well" than on "I made that speech well."[1] This suggests that the essence of wrongness, as usual, is that a smaller thing impedes the way of a greater. It will be safer to confine our pleasure to trivial spheres; to be complacent about powers rather than about Power, successes rather than success. But these are just what a child does have complacencies about. May he not be helped rather than hindered by these, and by innocent pleasure in the approval of his world? helped to walk in a certain way of conduct, his presence in which is the chief condition for the higher affection to grow stronger within him. Mixed motives need not lead to a pushing out of the highest; they may help to maintain such a position that the highest can go on pushing itself in. The growing child will need to live simultaneously on more than one level, but he *can* live on more than one level.

I believe, however, that there is still something more to say. If we use Mr. Leon's contrast of ego-centric and agatho-centric,[2] and if we concur with his teaching that the ego-centric person can adopt parts of the object world and treat them as parts of himself in possessive

[1] Though even for the preacher, the wisest plan is not to wrestle with his egotist self as with a fiend, but to recall a background and a sense of humour. The man who can laugh at himself will not go far wrong.

[2] P. 256, but implied throughout the book.

identification, then we ought correspondingly to add that the agatho-centric person can objectify his own life and self and treat them as part of the object that is to be made good; or as material for the partial embodiment of Goodness.

If we grant this, we are saying that the moral picture, of the total embodiment of Goodness, can be analysed in more than one way. We may analyse it into cross-sections, as Mr. Leon usually does; into right structures or situations, in which persons participate at different times of their lives. Or we may make a lengthways analysis, saying that Goodness is embodied in the persons amongst whom successive situations are formed. It should be possible, I believe, to use this alternative arrangement of our thought-lines without any essential change in belief about what morality is. The chief change in language is, that instead of saying that situations should fit into the embodiment of Goodness, we say the same thing of all lives and characters;—they should be good.

But this means that the genuinely moral man will rightly and objectively be concerned with the question whether *he* is moral or good or objective, at any time when he is envisaging the realm of goodness as a kingdom of souls. Goodness will mean, not indeed an ornament or a possession, but a vocation; moulded, as he looks forward and backward, along the lines of a life. "A charge to keep I have." *In this spirit*, without the taint of ambitiousness, we may state each individual share of the highest purpose in the form of an ambition; bend our regard upon ourselves without self-regard; be concerned with ourselves and our position without being egotists. This way of the analysis may not be so common as the crossways plan in the thought of the modern grown-up citizen, yet it may still provide the simplest scheme for moral philosophy in the loose-knit world of the child. I urge at any rate that we may be using a lawful variant in thought, and not departing from the objective and agatho-centric will, when we impart to him the ideal of "being a good boy."

III.—Summary of results and conclusions.

My "Yes, but . . . ," brought forward chiefly from the point of view of the educator, is done, and I am grateful to Mr. Leon for the amount of thinking that he has made me do. I have concurred warmly with his working out of the contrast between egotism (the nisus towards supremacy or soleness) and the moral nisus, towards a situation of at-oneness amongst persons; and have suggested only that certain qualifications should be added or made clearer. For instance, (1) that a subordinated egotism, with a background of awareness, may sometimes play

a useful part; as in games and other semi-serious competition; (2) that assertiveness, pugnacity, prizing, etc., may be disinfected from egotism, leaving a purified basis which it is indispensable to keep; (3) that innocent ambitions have their place in assisting the moral growth of the young; and that, further, it is necessary to distinguish carefully between egotistic ambition and the sense of vocation. I believe that all this involves no serious objection to anything in Mr. Leon's work, but rather an appreciation of it, followed by requests for its expansion. Meanwhile, I invite the attention of educators to a very interesting and welcome contribution to educational psychology and to ethics.

RÉSUMÉ.

L'ÉGOTISME ET LA MORALITÉ.

Cet article est une appréciation et une critique d'un livre qui vient de paraître, intitulé " L'Ethique de la Puissance," par M. Philip Leon. L'auteur de l'article loue chaleureusement le contraste établi par M. Leon entre l'égotisme (tendance vers la domination ou l'isolement) et la tendance morale vers un état de solidarité.

Elle suggère qu'il faudrait y ajouter, ou exprimer d'une façon plus claire, certaines modifications, surtout au profit de la pédagogie. Par exemple (1) qu'un égotisme subordonné d'une façon plus ou moins consciente, peut quelquefois jouer un rôle utile; comme dans les jeux, ou d'autres concours à moitié sérieux. (2) Que l'amour-propre, l'instinct de combativité, le désir exaggéré des prix, etc., peuvent se vider d'égotisme, laissant un fond purifié qu'il faut absolument conserver. (3) Que les ambitions innocentes peuvent servir à encourager le développement moral de l'enfant, et qu'il faut, en outre, distinguer soigneusement entre l'ambition égotiste et l'idée d'une vocation.

ZUSAMMENFASSUNG.

SELBSTÜBERHEBUNG UND ETHIK.

Der Artikel ist eine Auseinandersetzung mit einem neuerschienenen Buch, " Die Ethik der Macht " von Philip Leon. Der Artikel hebt den Gegensatz hervor, den Herr Leon zwischen Egotismus (der Neigung zu Überlegenheit oder Selbstisolierung) und der moralischen Tendenz zu einem Zustand des Sich-im Einklang-Befindens mit Anderen gemacht hat. Hauptsächlich aus pädagogischen Gründen schlägt die Verfasserin des Artikels die Hinzufügung einiger genauerer Definitionen vor, z. B. (1) dass ein untergeordneter Egotismus mit einem Hintergrund von Bewusstheit gelegentlich sehr nützlich sein kann, wie bei Spielen und halbernstlichen Wettbewerben; (2) dass Selbstbehauptung, Streitlust, der Wunsch, den Preis immer davon zu tragen usw. von Egotismus befreit werden können und so eine gereinigte Grundlage aufrechterhalten, die unerlässlich ist; (3) dass unschuldiger Ehrgeiz seine Bedeutung in der moralischen Entwicklung der Jugend hat, und dass es ausserdem notwendig ist sorgfältig zwischen egotistischem Ehrgeiz und der Idee der Berufung zu unterscheiden.

CRITICAL NOTICE.

THE PREDICTION OF VOCATIONAL SUCCESS : by E. L. Thorndike. (Commonwealth Fund and Mr. Humphrey Milford. pp. 284+xxxiv. 10s. 6d.)

MODERN investigations in vocational prediction are largely concerned with two problems; one is that of securing comprehensiveness in the tests so that every important ability or quality is covered; the second has to do with the period for which prediction is reliable. Prediction for long periods ahead is naturally of importance if testing is to be of any real value; nothing less than a forecast for ten years is likely to be of general use, for when their children reach the age of fourteen years parents think seriously of careers for them, and begin to set them on the path to acquire settled occupations by twenty-four at the latest. Courage is needed on the part of any who embark upon investigations in vocation testing when long period prediction is in question. Quite apart from settling a plan for the inquiry, selecting the team of researchers and the subjects to be tested, not once only but perhaps many times, there is the prospect of years during which close following up of the subjects is essential for ultimate success. Meanwhile, improvements are made in methods of research technique, and in tests; in any one enquiry the conditions of research once decided upon cannot readily be changed unless there is certitude that results achieved by different means can be properly co-ordinated with those obtained on the original plan. As it is hard to get such assurance the workers must continue on lines which may grow obsolete under their eyes before the goal is reached. Professor Thorndike and his colleagues have not escaped the experience.

Should it be asked if the research now reported marks an epoch in work of the kind, the reply is that it has not advanced knowledge more than any other in similar fields, but it is probably one of the most comprehensive reports on long range prediction yet published. It is not a reflection on the capacity of Professor Thorndike and his colleagues to say they have attempted an extraordinary task, but owing to passage of time and economic changes of unprecedented severity they have only attained ordinary success. All concerned are to be congratulated that under the circumstances they have done so much. Values are notoriously variable; standards of living and fashions change; in the course of ten years much may happen; the investigator then stands to be shot at because of conclusions that are no longer of practical use. The difficulty of standardizing altered values has complicated this report. The con-

tributors have been alive to what was required and appear to have dealt faithfully with their material wherever possible, but doubts are bound to rise to mind; to take one example, it is a matter for debate whether or not the weighted corrections of earnings proposed by Dr. Lorge (page 238) are of general application, and if it be shown they are not, some of the conclusions of the report must be of local significance only.

Again, some of what comes out as evidence in a report on a long period research is almost sure to have been anticipated by other investigators so that it stands the chance of being ancient history by the time the final report is published, and its freshness suffers accordingly.

The history of research in vocational prediction does not concern us here, but we may recall how often we are poorly served by family tradition or personal predilections, intuitional judgments are highly fallible, and parents' hopes for their children fall short of realization. Thorndike admits he could perhaps have obtained better predictive probability if he had had better data, but he appears to be doubtful about the value of personal impressions, thus confirming what has been learned from other sources. The knowledge may, however, still be something like a blow to the believer in intuition.

When Vocational Bureaux began to be set up, short period prediction alone appears to have been possible. The main desiderata in the vocational adviser or counsellor were at first, knowledge of what forms of employment were available, experience in estimating qualities in a client and the abilities required for a piece of work, but he had no sort of measuring stick, either for estimating the applicant's capacity or the requirements of the job, such as exist to-day; furthermore, the fitting of a client to a job was more a matter of judgment of a sample of abilities actually developed than the detection of those abilities in embryo, but capable of being trained. Demands for some reliable means of estimating quickly multiplied. One will appreciate how the counsellor must soon have realized the value of being able to anticipate sample testing. The teacher who has the means to train, if he knows the direction of a bent, wants to know how to discover the bent. He should be able to advise parents as well as pupils. Manufacturers, too, who train their own operators want to find those whose training will be economical. What tests have been devised to meet the needs, and what is their nature? Bearing in mind that the qualities necessary for some careers vary very much in degree and in kind, we can say that on the whole they comprise tests of intelligence, general or specific; manual ability; mechanical ability; and on no account ought temperament and personal qualities such as leadership, optimism, perseverance, etc., to be omitted.

A good deal has been done on each side of the Atlantic in the construction of psycho-graphs and occupation profiles and there is probably a future for their use under suitable controls and reservations. Now (1934) Professor Thorndike and his team of assistants have produced a report of a research whose results are illuminating. They are valuable even where they only confirm what one must suppose has long been suspected, and occasionally they contradict popular opinion. The research itself began in December, 1921, after careful planning and devising of tests which could be deemed adequate for the objects in view. These objects were " to discover how trustworthy and useful educational and vocational guidance is at various ages " ; whether guidance given at age fourteen is less trustworthy than an individual's own ideas and impulses ; and if guidance as now given can be made more beneficial although no more expensive.

Two thousand, two hundred and twenty-five boys and girls were dealt with. They were aged thirteen to fifteen years, and in attendance at fifteen schools in New York and Manhattan. They were of mixed racial origin and, in several instances, of low economic and social status ; 1,751 of the total number were chosen from eighth-grade classes. One of the remarkable features of the research was the success of the follow-up of these young people in the course of the ten years following the first tests. Those who undertook this part of the work had the difficult task of maintaining their standards when dealing with assessments given by operators and employers. It is not easy to estimate a subject's " liking " for a job, nor is it easy to assign values for " suitability " as described by an employer. Some of the conclusions arrived at will be mentioned later ; one matter for criticism is that of correlation coefficient values. The report gives many that are significant, but the inferences which are drawn occasionally seem to demand caution in acceptance, particularly because no measures of their reliability appear to be cited. Even when high correlation is found, e.g., between the score in arithmetic and reading and that in clerical intelligence (r=0·81) there is no statement of the value of the probable error. We have it on the authors' authority given with deep conviction that the tests were such as careful experiment had found to be thoroughly satisfactory, and that they were furthermore capable of application by any intelligent and careful persons. This is a very important quality in such tests if it is possible to get it. The tests aimed at measuring (1) ability with ideas, (2) ability with things and mechanisms, and (3) ability with clerical items and procedures. The Stenquist Assembly Tests and the Institute of Educational Research Assembly Tests were used for measuring the

mechanical adroitness of boys and girls respectively. There is a remarkable disparity between the Stenquist Test results and the later educational success of boys both in the age and grade groups. The girls' tests correlate more closely with educational success, but the factor is low. Tests of the kind seem to measure an ability which is not discoverable by other school tests, nor does mechanical ability gain much school success in itself. The Stenquist Tests may be of doubtful value in this connection, but they were probably the best available when the investigation began.

During the eight years following the tests the after-care visits to the young subjects in their homes, and in rare special circumstances to the employers, elicited statements about the kind of work done, the payment for it, whether it was enjoyed, the amount of unemployment, the level of the work, etc.

The "level" is of interest since with enjoyment of a job or otherwise it is one of the few indications of any measures of temperament given in the report. It involves possible leadership, but whether by luck or by proven capacity can hardly be made clear. The tests applied in the first instance might have taken account of ability to deal with a new situation, initiative, assurance, pertinacity, reliability, self-confidence and so forth. The absence of items of physique, abilities and interests from school and test records is lamented, but Professor Thorndike still claims his tests are fair samples and adequate for his purposes. Thorndike says the school *grade* reached at a given age is a symptom of general intelligence, of health, of freedom from home duties and distractions, but while there is practically no relation between the grade reached at age 14 and the *age* on leaving school, it appears that the grade reached at age 14 does give an indication ($r=0{\cdot}71$) of the *grade* when the scholar ultimately leaves. Similarly the scores in reading and arithmetic have no useful predictive value for the school leaving age, but they have as regards the grade on leaving. Thorndike claims the predictive value by testing is better than a rough guess. The value of the information is in confirmation of what one would expect among the population of low social status. Arithmetic and reading have a high predictive value for clerical intelligence but they do not indicate very well what earnings will be at 20 to 22 years. Dr. Helen Wooley discovered negligible correlation, but Thorndike thinks her results might be positive and higher. The valuable point seems to be that clerical workers among girls at this age are likely to be picked out on this basis little better than will mechanical workers. Conduct marks at school are not useful criteria of earnings at age 21.

Virtue may consider itself unrewarded when the correlation between conduct and earnings is as low as 0·02! Conduct and marks have com-

pensations, however, for they will predict, though not too surely, so far as high values of (r) are concerned, how scholars will get on in the immediately subsequent period at school; but here again scholarship counts more than conduct.

The wage earned at age 18+ is some indication of what is probable at 20-22 years. Prediction is on surer ground here; the facts are commensurable and the prediction is at comparative short range. Perhaps in New York the period 18 to 22 years is not a critical one in employment.

Educational success may be predicted with fair approximation by the clerical intelligence test and by the tests in arithmetic and reading.

The specimen tests set out (pp. 122-6) are worthy of notice, though the above inferences only confirm what has been common knowledge for everyone knowing anything about secondary school entrance examinations for the past fifteen years.

A claim is made that the scores in reading, arithmetic and clerical intelligence together with the school record of attendance, progress and conduct (values for all of which can be procured in a short time) form a more reliable guide to future educational progress than the progress record of eight years in school. This also confirms what has long been believed to be a reasonable assumption.

From Table 35, page 58, it appears that success in school and intelligence scores at age 14 are almost valueless as indications of success in mechanical work six to eight years later. The measure of success is based on earnings, level of work and interest. But are not earnings of doubtful value as standards? It depends on how payment is adjusted to standard and controlled; payment for certain work is controlled. If so, the basis is sound, but on the other hand some work is not properly recompensed (cf. page 75). There seems to be room for a more complete statement about this point. A remarkable fact, that the present writer believes has emerged in other enquiries, is that tests of mechanical adroitness to some degree share the poor predictive power of school success.

The inference is that none of the tests applied so far at 14 years promise to be any help to the counsellor some years later. But an intelligence score has a slight positive value towards determining success in mixed mechanical and clerical, or purely clerical work.

The clerical intelligence test at 14 years foretells earnings definitely; when it is combined with tests for clerical activities, abstract intelligence, and scholarship, a reliable prediction seems to be possible. Care is necessary, however, for success is dependent upon permanent employment and becoming known to the employer. In a large business there

may be too little personal touch to allow of promotion according to prophecy!

The three qualities tested at 14 appear to be better guides to success at age 20-22 than at age 18-20, but notwithstanding they all point in the same direction, the correlations are very low.

Success at high levels in late life is suggested to be more in line with test scores at 14 years, probably because "the abilities measured by the tests may have more influence at higher levels, including professional work, than in such work as is done at age 20-22." The argument may be valid, but surely the responsibilities of marriage or invested capital, and temperamental factors, provide incentives which may contribute to the same end.

The probabilities of prediction at 14 for suitability in clerical or mechanical work are positive but small. We cannot judge from the report that the tests for mechanical promise are adequate. There are many varieties of mechanical work which may each require specific abilities—the tests may be useful in detecting some broad 'general' or possibly a mechanical 'group' factor.

In reports on experimental work of this kind two faults may be found; one is in the method and the other in the conclusions when attempts are made to explain the factual results. This work has entailed vast labour with good methods so far as the plan allowed, but the conclusions are vitiated by the neglect of human factors. It is probably one of the biggest reports on long-range prediction yet published, but instead of becoming *the* "classic" on predictability, the book is just a record of patient and meticulous labour into which one has to delve deeply in order to extract the conclusions at which the investigators have arrived.

A. P. BRADDOCK.

BOOK REVIEWS.

Lectures on Conditional Reflexes: By I. P. PAVLOV. (George Allen and Unwin, Ltd. pp. 414. 12s. 6d.)

Although this translation was published in 1929 it has only recently been sent round for review in this country, apparently because if has only just been adopted by Messrs. George Allen and Unwin. A publisher's note calls attention to the distinction between the present book and the book entitled *Conditioned Reflexes*, which is of a more systematic nature. The present volume consists almost entirely of papers and lectures given from the year 1903 almost up to the time of publication—papers that were read before National Congresses in various countries, before learned societies and so forth. One consequence is that there is a great deal of repetition in the volume. One finds, for example, half way through this lengthy book an explanation of what is meant by a conditioned reflex. Nevertheless, the work of Pavlov is so important that we value very highly this collection of papers. If there is repetition it is repetition within a paper which is definitely concerned with the exposition of some particular aspect of physiological psychology; thus one paper deals with the so-called psychical processes in higher animals, another with inhibition, another with general facts about the cerebral centres, another with the physiology of sleep and so forth. As most of our readers will know, Pavlov carries his conception of the conditioned reflex right into the highest and most complex mental processes. Thus he speaks even of a " reflex of purpose," the analogy of which with the food reflex indeed seems to be somewhat hazy. (By the way Pavlov urges that this "purpose reflex " should be " cherished." So there must be a " cherishing reflex.")

Even if one takes the determinist view as to all mental processes and as to human behaviour the term reflex surely loses any valuable significance when it is so employed. From the point of view of mere facility in psychological thinking the use of special terms for more complex processes would seem desirable.

We must refer to the surprising belief apparently held by Pavlov in the hereditary transmission of acquired character. He thinks the perseverance of the freedom-reflex " in certain dogs was due probably to the fact that half of the preceding generation of these two particular dogs on both parents' sides were untrained curs and had never been tied up and so were accustomed to full freedom.

Pavlov, however, is always stimulating and suggestive. and publication in this form of lectures gathered from many quarters, is a most convenient and welcome one. C.W.V.

A Group Factor Analysis of the Adjustment Questionnaire: By R. C. PERRY. (Southern Calif. Educ. Monog., 1933-34, No. 5. Los Angeles, Univ. So. Calif. Press, 1934. pp. xii+93. $1.50.)

The major problem attacked in this investigation is the determination of the number of independent factors in a so-called adjustment questionnaire. The following tests were administered to 328 entering freshmen: Laird B2 (neurotic tendencies), Laird C2 (introversion), Bernreuter scales (introversion, neurotic tendencies, sufficiency, and dominance), Pressey X-O tests (idiosyncrasy and affectivity), Allport A-S reaction (ascendancy-submission), Thurstone Psychological examination (intelligence), and the Iowa High School Content examination (achievement). Analysis by inspection of the tables of inter-correlations, by Thurstone's factor method (as first presented by Thurstone), by means of tetrads and Kelley's pattern scheme, and by partial correlation procedures, led to the following conclusions: Four group factors (in addition to chance and specific factors) are measured by these tests, namely: (1) a group factor akin to " introversion " or " neurotic tendencies," (2) a factor in tests of " dominance," " sufficiency," and " ascendance," (3) a factor running through tests of " dominance " and " ascendance," and (4) an " intelligence-achievement " factor.

The first two factors have been noted by Bernreuter and others, the third factor is an artifact due to the circumstance that Bernreuter's scale for dominance was originally validated against the Allport scale for ascendance, and the fourth factor is clear from the fact that these personality tests are well known to give negligible correlations with intelligence and achievement.

The Frontiers of Psychology: By WM. MCDOUGALL. (London, Nisbet and Co., Ltd., and Cambridge University Press. pp. 235. 5s. net.)

The Contemporary Library of Psychology has already firmly established itself among students of psychology and among general readers who are interested in the development of the science of psychology. The General Editor of the Series has a very wide view of the scope and range to be allowed and the high standard already reached by the earlier volumes is fully maintained by this addition from the pen of Dr. McDougall. The author defines the title of the book in his own preface. "I use the word 'Frontier' to point to the relatively unexplored regions that lie between the recognized provinces of the established sciences. For in those regions lie many problems which may be solved only by co-operation of two or more sciences. More than any other science, psychology is, or must inevitably become, involved in such co-operative efforts."

Such is the fascinating territory that Professor McDougall has attempted to survey. Necessarily it must be not more than an introductory mapping of the field, but he has succeeded in giving the reader an exceedingly useful guide to the main territories and planted many signposts directing to areas demanding more definite and intensive investigation.

He discusses relationships between the sciences, Science and Philosophy, the Frontiers between Physics and the Abstract Sciences, the Frontier between History and Psychology, Human Progress as Evolution and completes the volume with a chapter on the Nature of value as a Frontier Problem.

In the discussion of these and cognate subjects the author has much valuable criticism to offer upon modern science and scientists. His clear thinking and provocative writing will stimulate his readers to a more careful survey of many of the frontiers, and possibly to the clarification of some of the confused thinking so common to-day in reference to these frontiers.

The Family: its Sociology and Social Psychiatry: By JOSEPH KIRK FOLSOM. (Chapman and Hall, Ltd. pp. 604. 25s.)

The Professor of Sociology at Vassar College has produced a very comprehensive sociological study of the family in which his appreciation of the psychological point of view and his familiarity with recent psychological work constantly reveal themselves. The book covers an enormous amount of material. Indeed some parts of it are apt to appear largely as summaries of researches on a particular problem. Another way, however, of putting this would be to say that Professor Folsom does not obtrude or stress his own point of view. Results are treated critically, but he seems to be more anxious to state facts collated by others than to embody them in a systematic treatment from one point of view. As a guide, however, to the literature of the subject and as a preliminary classification of a large proportion of the work that has been done upon it the book should be invaluable. The treatment ranges from the family in prehistoric and primitive conditions, tracing social changes to recent times. It touches on many sided problems that are not ordinarily included in sociological studies of the family, as, for example, the control of reproduction, the economics of children in the home, problems of marriage, happy and otherwise, and of mate finding, divorce, sexual customs and moral principles. Of particular interest to readers of this journal should be the later discussion of family problems, the adjustment of relations between parent and child and between different children. We regard the volume as a most important contribution to the study of the family.

The Effect of Practice upon Individual Difference: By RUTH E. PERL. (Archives of Psychology, Columbia University. No. 159. pp. 54.)

This is one of the series of publications published under the editorship of Professor Woodworth. The writer gives first a useful survey of the extensive literature of the subject and the necessity for the careful interpretation of the term "equal practice and equal gain." This is followed by an account of an experiment with four tests on about 100 children with a wide range of intelligence-quotients from 60 to 151. The tests included one simple paper and pencil test almost entirely

motor in nature, namely, making figures to represent gates, consisting of four short vertical lines and a sloping cross line, thus . The second test was Whipple's symbol-digit test; the next a Turkish-English vocabulary test for substitution work, and finally a simple arithmetic test of an intelligence type. The main results confirmed the hypothesis already put forward on the basis of some other investigations, namely, that in simple tasks individual differences decrease with practice, while in more complex tasks, they increase. In the making-of-gates test individual differences decreased with practice. The correlation of initial ability and gross gain was used as the indicator of the effect of practice on individual differences.

School Administration in the Twentieth Century: Edited by JESSE B. SEARS. (Oxford University Press. pp. 83. 4s. 6d.)

Number 4 of the Stanford pamphlets embodies five addresses delivered at a birthday party held in honour of Ellwood P. Cubberley, whose "response to many toasts" is the sixth and concluding section. The birthday was also the day of Professor Cubberley's retirement from his Chair and Deanery at Stanford, so it was deemed appropriate to recall on that day the numerous developments which have occurred in different departments of educational administration throughout the United States during the past thirty years, especially as the Professor has been closely concerned with so many of them. State Schools, City Schools, School Research, Training of Teachers, and Trends in the Teaching of School Administration, are in turn treated by men of distinction in the addresses. The developments are interesting in themselves, and as a tribute to Professor Cubberley. But the final reply rested with him and he was reminiscent. His closing address is domestic; he just tells how his work was facilitated by the help of loyal colleagues and Mrs. Cubberley.

Elements of Modern Logic: By S. H. MELLONE. (University Tutorial Press. pp. 333. 5s. net.)

Dr. Mellone has "endeavoured to make a contribution to the teaching of Elementary Logic" by writing this extremely interesting and eminently readable exposition of the principles of logic. The person who is reading the subject for the first time is particularly kept in mind by the author, and the standard to be achieved is approximately that of the matriculation examination. Dr. Mellone's careful and scholarly treatment is in evidence throughout and the book will be welcomed by many teachers of elementary logic.

Psyche and Minerva: By J. ALEXANDER GUNN. (Melbourne University Press in association with Oxford University Press. pp. 32. 2s.)

This is "A Select Bibliography of What to Read in Psychology and Philosophy." It is compiled in response to many requests for guidance in reading in philosophy and psychology and students will appreciate the valuable assistance given to them by Professor Gunn. In this edition the lists have been brought up to date. Two excellent introductory essays add greatly to the value of this useful little compilation.

Manual Skill: Its Organization and Development: By J. W. Cox, D.Sc. (University Press, Cambridge, 1934. Cambridge Psychological Library. pp. xx+247. 16s. net.)

It can be said without hesitation that the researches recorded in this book are of the highest importance both to psychological theory and to its application in industry.

The main line of the experiments was the investigation of skill in the assembling and "stripping" of the parts of an ordinary electric lampholder, these operations being compared for "reference" purposes with the author's tests of mechanical aptitude, intelligence tests, and simpler manual dexterity tests. The tests were given to some thirty-three adults, sixty boys and thirty-six girls, the two latter groups being drawn from elementary schools. To the intercorrelations thus obtained

Spearman's tetrad technique was applied, and group factors isolated and evaluated by Yule's partialling procedure. The assembling of the lampholder was observed under two entirely different conditions: (1) when the subjects were unacquainted with the procedure and had to find out the relative positions of the parts—called "mechanical" assembling by Dr. Cox, and (2) when the method had become familiar and success depended on dexterity in manipulation of the parts—called "routine assembling."

In all the tests a general intellective factor was found in small amount. In the mechanical assembling tests a mechanical group factor, identified with that previously found in Cox's mechanical aptitude tests, showed itself, while the routine assembling tests gave evidence of a "manual" group factor. No other group or general factor was considered to operate in any of the tests.

The discovery of the manual factor marks an important step forward in the investigation of manual skills, which hitherto had been regarded as almost mutually independent. Evidence of a similar factor was found by Attenborough and Farber (*Brit. J. Ed. Psych.*, 1934, *4*, 151) in simple manual tests given to sub-normal children, and provides confirmation of Cox's results. The factor appears to increase in importance with increasing complexity of the assembling operation, and its bearing on the selection of workers for the multifarious assembling operations in industry is obvious.

The statistical procedure adopted by Dr. Cox calls for some comment. The tetrad differences given by the intercorrelations are wisely expressed each in terms of its own probable error, so that greater confidence can be placed in the recorded distributions. The examination of a series of tests for the presence of a group factor is carried out by means of selected "directed" tetrads, a much more satisfactory procedure than that of observing the properties of a distribution of all possible tetrads, positive and negative, from a table of correlations.

Dr. Cox is obviously a devotee of the Two-factor school, and with them is, in our opinion, too ready to infer the absence of overlap when experimental data may be consistent with overlap in large amount. Thus his statement (p. 69) that when the tetrad difference is zero "the correlations are necessarily attributable to one and the same factor" overlooks the now generally accepted view that the interplay of many group or general factors can result in vanishing tetrads. Again, in dealing with sampling error he writes (p. 69): "Only when the tetrad difference exceeds that to be expected from chance or accidental circumstances can the condition (for a single common factor) be regarded as not satisfied, i.e., when the tetrad difference exceeds about $4\frac{1}{2}$ times its probable error." This is altogether too sweeping a statement, and its acceptance must inevitably result in the formation of unwarranted conclusions as to absence of group factors. It is a thousand pities therefore that Dr. Cox's investigation is based on such small samples of population with correspondingly high probable errors; the enhanced value of the results from larger samples would have been out of all proportion to the extra labour involved.

In consequence of the use of small samples and of what we consider to be a wrong interpretation of the statistics, Dr. Cox concludes that group factors other than those already mentioned do not operate to any appreciable extent. With this conclusion we cannot agree. For example the tetrad quoted on page 97, $\cdot1466 \pm \cdot05836$, as it stands suggests a second group factor in the routine assembling tests of saturation at least ·5, and one is as justified in inferring the presence of a much larger group factor than this as in concluding the absence of such, as does Dr. Cox. Similarly the tetrads quoted on pages 85 and 96 can in no way be regarded as proving the absence of other group factors.

We are also left wondering whether a factor corresponding to the apprehension of mechanical *function* as distinct from spatial relations, as indicated in the analysis of psychological processes (p. 186), has not been overlooked. Such would be expected to predominate in the mechanical aptitude tests, and it seems that the relevant correlations and tetrads in Tables XVI and XVIII (pp. 73 and 74) are certainly consistent with the presence of such factor in considerable amount. But once again we are held up from a final judgment by the large probable errors. (A reference to Dr. Cox's book "Mechanical Aptitude," p. 128, supplies further evidence that some such factor may be present.) A further unfortunate consequence of the use of such small samples is to reduce considerably our confidence in the figures recorded for the saturation of group factors found.

All this, however, detracts in no way from the extremely important *qualitative* results of the investigation, for the existence of those group factors recorded seems to have been established beyond all doubt in the face of the inherent difficulties arising from small samples. Whether they are unitary in their function is, however, open to question.

The next section of the book deals with the development of manual skill under conditions of (1) ordinary practice, where the subject simply repeated the operation at maximum speed, and (2) training, in which the subject received instructions in general principles and carried out formal exercises based on these principles. Noteworthy results issued from the observations. It was found that skill at one operation acquired by ordinary practice did not transfer to other operations, whereas marked transfer of skill to a wide range of operations showed itself when subjects had previously been specially trained on one operation. "This transfer is manifested not only in superior ability, but also in a superior rate of progress. These results appear of great practical significance, especially when it is remembered that the limits of proficiency to be attained by training may far exceed those attainable by uninstructed repetition" (p. 176). Little correlation was found between general intelligence and improvement under conditions of training, which suggests that "training of this kind should be effective whenever there is present the modicum of intelligence needed to understand the simple ideas involved in the exercises" (p. 177).

Finally we have a penetrating analysis of the psychological processes which underlie mechanical ability and manual skill. This is carried out by the aid of Spearman's principles of cognition, and represents an important contribution to the psychology of the subject.

The book is well written, but demands and deserves close attention from the reader owing to the exhaustive treatment of the several points as they arise. The arrangement of subject matter and the development of the argument are model in character; in particular the use of frequent captions and paragraph headings is of great assistance to the reader. The book will undoubtedly appeal to a wide circle.

W.G.E.

A Vocational Guidance Research in Fife: By F. M. EARLE and J. KILGOUR. (National Institute of Industrial Psychology, Report No. 6. pp. 101. 4s. 6d.)

The report now published describes a further step in investigating the value of the Institute's procedure in vocational guidance, and it throws light on problems of guidance in rural areas and on the constancy of certain tests when applied to the same individual at different ages. The last point seems to be of great importance; any variations of predictive value that may occur at different ages should be known. The Fife experiment indicates reliability in some tests, but not in all, that are often thought to be valuable; of reliable tests there is variation of consistency from year to year, so that they may serve for comparatively short periods only, and what may be predicted of a child at eleven years may not always be said at thirteen years. The authors, referring only to the *tests they used*, conclude that tests of general ability are available which enable long range forecasts to be made; tests of scholastic attainment are dependable for short period forecasts only; mechanical abilities cannot be reliably measured before twelve years, and although manual dexterities can be measured at any age the measures are only of short period reliability. On the whole then vocation prediction is not reliable till thirteen to fourteen years. But tendencies may be detected and training shaped upon the indications.

The report is undoubtedly a considerable contribution to the problem of vocational guidance. During the London investigations the multiplicity of occupations and physical conditions made it impossible to get clear cut classifications in measures of abilities for precise occupations. In Fife a more condensed treatment was possible. The tables supplied in the Report (p. 78 ff.) show how indications furnished through the tests have been the basis of advice to numbers of scholars in urban and rural schools. Some evidence of the failure to follow advice, either by necessity of circumstances, ignorance or apathy, is already to hand, but two essentials among many for entire success in investigations of the kind reported upon are (1) close "follow up,"

or after care as some call it, spread over (2) a period of several years. The reasons will be obvious to those interested.

The two researchers have indeed produced a report which, besides its additional light on the problems investigated, contains many incidental suggestions for research and describes clear methodical procedure. A.P.B.

The Act of Musical Concentration: By TOBIAS MATTHAY. (Oxford University Press. pp. 35. 2s. net.)

Any addition to the writings of the master who revolutionized the whole technique of pianoforte playing and the principles of its acquisition must demand the careful consideration of all musicians. This little book, one of a series of "Six Psychology Lectures for Music-makers," purposes to show the "true function of analysis in playing, teaching, and practising." It is a vivaciously expressed condemnation of practising, performing, listening, or "listening-in" without the deliberate effort of attending cognitively to the whole business. "We cannot sit before music like cows, or like vegetables in the sun for it to soak in—vaguely, without effort on our part."

Music, a compound of patterned rhythmic movements, of relations rather than of isolated musical sounds, must, therefore, demand for its interpretation and appreciation the cognitive processes involved in analysis. This truth tends to be obscured both by the essentially emotional content of music, and by the inevitable mechanization of a great deal of the processes involved. In a section devoted to these mechanized processes, Subconsciousness is defined as "the sum of all one's experience, (and of one's inherited proclivities), grown into habit of mind."

The misuse of broadcast music, as a background to other activities, is deplored as "accustoming us to be inattentive and callous to musical sounds."

The author's tendency to introduce Faculty Psychology and to suggest a general transference of training from the study of music invites criticism, but in no way detracts from the value of his main thesis in its relation to the specific practice and study of music. J.M.

Studies and Reports. (Published on behalf of the University of London Institute of Education by Mr. Humphrey Milford.)

We have before us Numbers II and VI of the University of London Institute of Education "Studies and Reports." In effect they supplement one another. Number II begins with reference to Joseph Payne, and after a necessarily short but excellent review of the general stream of educational development both in thought and practice, it winds up with a warning quotation from Sir Michael Sadler to the effect that each nation must work out its own systems of education, albeit it may with advantage observe what others are doing. Is it really too much to hope that one day the world will allow education to supersede armaments in national importance?

Number VI of these Studies is a tribute to John Adams. Joseph Payne, now rarely recalled, was the first Professor of Education in this country, appointed two generations ago by the College of Preceptors; John Adams belongs to our own day and his work is monumental. Sir Michael Sadler reviews it fully and sympathetically in a telling picture of Sir John's career. Excellent as it is, there is something wanting in it; something that could only be supplied by those who have sat at the feet of this Professor, enjoying his friendship, laughing with him, and always learning from him things that are not written in books. The author could not supply this touch, but what he has done he has done well. A.P.B.

History Teaching in Schools: By PROFESSOR A. F. HATTERSLEY. (Longmans, Green and Co., Ltd. 5s.)

A slim volume of some 150 pages, packed full of stimulating and suggestive material. Written primarily for South African teachers and students whose historical and educational problems are necessarily peculiar in a country, where peoples at

different grades of civilization live side by side, where pre-historic times linger into the present and where few concrete evidences of an historic past exist. Professor Hattersley, however, has read, digested, and moreover tested in the light of experience everything that has been written within recent years on the subject of history teaching. His book will, therefore, be found a handy compendium by teachers everywhere, containing sound advice on the practical application of ideas and principles in a subject generally recognized as perhaps more difficult than any to teach in schools and in the interpretation of which there has been a veritable revolution in recent years.

Emphasis is placed on history as "a living social study" and the special requirements of both primary and post-primary schools examined. Not the imparting of information, but the training of mental activity in conformity with the new tendency in education is again stressed. To this end much valuable material is supplied on the use of "sources" both for illustration and atmosphere in the primary school and as a means to independent study in the secondary school. Practical advice, often illuminating, in achieving the ideal curriculum which would teach national history against a background of world history is supplied. Time lines, charts, and diagrams, books and illustrations, the relation between geography and history—all are discussed. A very interesting chapter on the teaching of the subject in native schools is appended. Altogether a most comprehensive and useful little volume. S.W.

Colour: *A Manual of its Theory and Practice*: By H. BARRETT CARPENTER (Batsford. 9s.)

This is a book which, from the practical standpoint, should be of untold value to every art teacher, or to anybody anxious to expand their knowledge and experience in the world of colour. The psychological effects of colour, and its value in life, are undeniable, and the late author in recognizing that mere scientific knowledge will not make a master of colour, yet has appreciated the limitations to which expansion of a natural instinct are subject through modern conditions of city life. Not only has he given information whereby the reader may obtain valuable experience in the use of colour, but also opens the eyes to the reasons for the unsuccessful colour frequently found in manufacturered goods.

Not least amongst its virtues is the fact that the book is pleasant to read, and does not speak in difficult technical language.

It is a pity that, from the point of view of pattern, the author's examples are not more attractive, but this third edition of a valuable book is considerably enhanced by the inclusion of some beautiful Eastern patterns of equally beautiful colour, coupled by interesting descriptive notes. C.R.C.

Broadcasting Foreign-Language Lessons: By F. H. LUMLEY. (Bureau of Educational Monographs, Number 19. Ohio State University, Columbus, Ohio. pp. 90. $1.00.)

Dr. Lumley points out the greater prominence given to the broadcasting of foreign languages in Europe than in U.S.A. and accordingly devotes the first part of this book to a fairly exhaustive study of the European position. While full of statistics, the first part is less interesting than the second with its detailed examination of the American situation, so full of America's weaknesses, in contrast to a perhaps too flattering portrait of Europe.

This publication will be of interest to those organizing or giving language broadcasts and also to listeners. The fullest information is given with regard to delivery, timing, appeal, variety, and so on. School reports are examined and helpful conclusions are drawn. Specimen courses, particulars of text-books, and a full bibliography are included. The work is a clearly stated report of an extensive enquiry. A.T.

Comparative Frequency List: By HELEN S. EATON. (Iala, 415, Lexington Av., New York City. Part I, 36 pp. 25 cents.)

This further interesting publication of the International Auxiliary Language Association gives the Esperanto "mean" for language units in English, French, Spanish, and German. The list shows clearly the suitability of Esperanto as a stepping stone to the acquiring of the principal European tongues, though, of course, nothing in the nature of propaganda is attempted, nor is, indeed, comment of any sort made. To those familiar with frequency technique and about to construct text-books the completed list should be of great value. A.T.

An Investigation into Secondary School Mathematics: By H. J. MELDRUM. (1s. 3d.)

The Education of the Retarded Child: By P. MOLITOR BACHELARD. (4s. 6d.)

The Development of Intelligence in Subnormal Children: By H. T. PARKER. (3s. 6d.)

The Effect on Retention of Different Methods of Revision: By MARGARET BRIDGE. (2s.)

Some Character Traits of Delinquent and Normal Children in Terms of Perseveration Factor: By G. CLARKE. (2s.)

These monographs are included in the well-known Educational Research Series issued by the Australian Council for Educational Research through the Melbourne University Press in association with the Oxford University Press. They all represent carefully conducted investigations on important problems in education.

The first is the account of an attempt, although unsuccessful, to elucidate a bimodal distribution of marks in one of the mathematics papers set in the Intermediate Certificate Examination in New South Wales in 1931. Several interesting subsidiary problems in staffing of schools, examination syllabus and selection of pubils for entrance into secondary schools emerged in the course of the investigation.

Dr. Bachelard has, in *The Education of the Retarded Child*, given a historical sketch of the development of legislation and opportunities in connection with the education of retarded children in Victoria, followed by a very useful survey of conditions at present. Statistical surveys of the special schools population, and interesting comparisons with Burt's results in England are added.

Mr. Parker's investigational work is with the sub-normal children in Tasmania, where he is Supervisor of Educational Research. His reports are interesting, his analysis of results and data is careful and thorough and his tentative conclusions enlightening.

Miss Bridge has experimented with various methods of revision and their effects on retention, and although her results must be accepted tentatively she found that revision of study lessons by oral questioning and answering, by filling in blanks in written passages, or by the children delivering lecturettes to the class, is more profitable than by written problem work. Her results may be compared with those reported by Eaglesham in this JOURNAL in June, 1931.

Mr. Clarke's monograph deals with an interesting investigation on perseveration. His comparisons with the results of other investigators are significant, and tend to substantiate their results as to the usefulness of the Mirror Image Test, but to throw doubt upon the reliability of the Alphabet-Number Test. His results also tend to suggest the significance of the relation between extremes of perseveration and well-defined character traits.

The Year Book of Education, 1935. (The University of London Institute of Education and Evans Bros., Ltd., London. pp. 963. 35s.)

This is the fourth volume of the Year Book of Education. As the number of volumes increases the book becomes even more useful as a work of reference, for it enables the editor to complete the general survey of education as well as to add supplementary sections dealing with new developments. Here, as in the earlier volumes,

Lord Eustace Percy, with amazing energy and breadth, deals himself with a considerable number of topics of wide scope and variety. He has now associated with him as members of a joint editorial board, Sir Percy Nunn and Professor Dover Wilson, who will in future share the responsibility for the editing of the Year Book.

The association with the London University Institute of Education, shows itself particularly in certain psychological sections. There is a large and important section dealing with the testing of intelligence in its many aspects, including some very substantial chapters by Professor Hambley, and also a section dealing with early childhood by Dr. Susan Isaacs. There are the usual chapters dealing with statistical and other aspects of education in the British Empire and the wide range of chapters on Education in other countries. The particular situation in the educational world at present is reflected especially in the section headed "Education and the Social Crisis," including a chapter on Adult Education among the unemployed of South Wales, and another on Junior Instruction Sections under the Unemployed Act. The section dealing with India is of peculiar importance in view of the present political situation.

On the whole the Year Book promises more than ever to be a comprehensive survey of world education with special attention to the English people and nation.

May we make one suggestion to the publisher? In a work of reference of this kind ready reference would be still easier if the main section or chapter heading were on the left-hand page and the particular aspect or sub-section printed at the head of the right-hand page. The custom of printing the title of a book on every left-hand page (and sometimes on both pages) seems to me unfortunate in a book of this kind. By the way the printer drops this when he comes to the index though that is clearly the index and nothing else.

If the editors could see their way to adding to the index an index of names the work of reference would be still further facilitated, though this undoubtedly would entail a great deal of additional work.

These, however, are small matters: the Year Book commands admiration to an increasing degree. It should be in the library of every serious student and administrator of education.

The Single Woman: a Medical Study in Sex Education: By ROBERT LATON DICKINSON and LURA BEAM. (Williams and Norgate, Ltd. pp. 469. 21s.)

This continues the study of the sex experience and education of women which was begun in the book *A Thousand Marriages*. It is based upon material gathered in medical practice chiefly by Dr. Dickinson, so that all the persons discussed needed to consult a physician on some question of health. Within this large group of over 1,000 single women studied for health, 300, most of them somewhat non-adjusted to life, were observed for sexual experience and these cases are recorded with great detail in this book. The bulk of the book is of interest chiefly to medical practitioners; indeed as arranged it is primarily a collection of material suitable for research workers. The amount of genuine psychological discussion is slight; but the actual facts recorded, with the checking of reports of patients by physical examination, do afford valuable material for the student of sex. Most of the book is written in a difficult and jerky style, though this would not trouble the physician in reading the records of individual cases, and the summary at least is consecutively written. Perhaps one of the most striking generalizations that seems to be permissible is that homo-sexuality in practically every case proved to be only a temporary affair, and followed by hetero-sexual experience.

Achievement in the Junior High School: By BANCROFT BEATLEY. (Oxford University Press. pp. xiv and 92. 11s. 6d. net.) Harvard Studies in Education, Vol. 18.

A study in answer to the question, "What has been the effect of reducing the time allotted to fundamentals, which is characteristic of junior high schools, in contrast to unreorganized schools, upon gains in achievement in them from the

seventh to the ninth grade?" The answer is that neither type can claim superiority in general or detail; that sex differences are unimportant factors in the determination and that since it has not impaired the mastery of reading, language, and arithmetic, the junior high school has been justified in giving less time to them.

The tests used included the Stanford Achievement Tests and the Advanced Tests; intelligence was measured by the Otis Self-administering Test of Mental Ability. The report is clearly stated and contains some useful descriptions of the methods of interpreting results and a chapter on preliminary and pioneer work by others in the same field.

The Neurotic and his Friends: By R. G. GORDON. (London, Methuen and Co., Ltd. pp. 88. 2s. 6d.)

This little volume is the latest addition to the extremely interesting series of "Monographs on Philosophy and Psychology." A high standard has been attained by the earlier volumes. Dr. Gordon's monograph maintains that standard of excellence.

The book consists of five chapters dealing with "What is a Neurotic?" "The Crises of Life," "Types of Neurotic Reaction," "The Misconceptions of the Public," and "Help for the Sufferer." Each of these subjects is dealt with in an elementary but illuminating manner, and the author's careful and shrewd comments will be of service to many people who are desirous of knowing how they may render the most valuable aid to assist the curative treatment of the neurotic. As one would expect from an authority of the standing of Dr. Gordon, the limitations of the value of the book are very clearly stated, but he is justified in hoping that the volume "will help the friends of the neurotic to lighten his path to restoration of health and happiness and will assist the general public to understand him and his vagaries."

The Schools at Work. (London: For the National Union of Teachers, by Evans Bros., Ltd. pp. 64.)

The sub-title of this valuable book is "a pictorial survey of National Education in England and Wales."

The book is prefaced by a foreword by the President of the Board of Education. Then follow short but illuminating articles on the Elementary Schools, the Secondary Schools, the Technical Schools, and the School Medical Service. The remaining part of the book consists of over fifty pages of extremely well-executed pictures of the many and varied activities in the different types of schools, from the nursery school to the secondary school, the technical school, and the many kinds of senior school. Some extremely interesting pictures of nineteenth century schools and classes are reproduced. The volume is a very useful and effective answer to the question, "What are the Schools doing for the Children?"

The Theory and Practice of Christian Education: By W. M. RYBURN. (Oxford University Press. pp. 260. 7s. 6d. net.)

This volume is written "With special reference to India and the East," and is introduced by a forward from the Education Secretary of the National Christian Council of India, Burma, and Ceylon.

The author is well-equipped for his task and has written an interesting and instructive book, rather stereotyped in its method of approach and presentation of the instinct psychology, but as the writer of the foreword says, there is a real need for such a book specifically devoted to the problems of religious education in India. It should receive a welcome in theological and teacher-training colleges. Teachers and those interested in religious education in this country will find much of value in the book.

Tented Schools: By DOROTHY REVEL. (London, Williams and Norgate. pp. 128. 3s. 6d. net.)

Miss Revel, whose earlier book "Cheiron's Cave, the School of the Future," will be recalled by many as a fascinating record of pioneer work in education, has again given her readers the results of her own experience and resource in connection with "camping as a technique of education," as the sub-title so aptly describes the book. All those interested in this important and integral part of modern education will find much of value in this little volume.

The Family: a Study of Member Rôles: By K. D. LUMPKIN. (The University of North Carolina Press, and Mr. Humphrey Milford. pp. 184. 12/-).

This is a very readable intensive study of forty-six New York families, selected from amongst those receiving help from the Charity Organization Society. The relations between parents and children were studied particularly and the way in which they adjusted themselves to differing economic conditions. Many of the parents of these families were immigrants from Central Europe and their difficulties were increased by the very different standards and ideals of their American-born children.

Individual Reading Tests. (Published for the Australian Council for Educational Research. Humphrey Milford. 4s. 6d. per set.)

This is an extremely useful apparatus for testing reading. Cards are very clearly printed on cardboard with a surface treated in order to be of service for long usage, and it seems to us a most convenient medium. No doubt the norms would need checking in this country.

FOREIGN JOURNALS.

Zeitschrift für Pädagogische Psychologie und Jugendkunde: 36 Jahrgang Nr. 2-3. February-March, 1935.

The discussion on *soldatisch* (soldier-like) and playing at soldiers (*soldatischen Spiel*) is continued in a paper by Dr. A. Knauer of Tübingen on "the marching column as a social structure." Through nearly 30 pages the author attempts a psychology of the various mental relations, internal and external, in a company of lads on the march. At age ten how difficult it may be to hold large classes in discipline and order on route-marches and excursions: but under the inspiring example of the Hitler-Jugend, there is such a thing as voluntary subjection, even expressed wishes for strict marching order, joy and delight in soldierly subordination. When flowing from within the individual mind insight into the necessity for strict discipline and order is a source of energy. H.R.

VOLUME V. NOVEMBER, 1935. PART 3.

THE RELATIVE POPULARITY OF SECONDARY SCHOOL SUBJECTS AT VARIOUS AGES.

BY R. A. PRITCHARD
(*From the Education Department, University of Birmingham*).

PART II.

IV.—*Reasons for liking or disliking subjects (continued).*
V.—*Some observations on the reasons for and against—and on the position of subjects in the order of preference.*
VI.—*Appendix* I: *Number of replies in various subjects and age groups.*
Appendix II: *Method of scoring.*

PHYSICS.

In Favour:

The word "interesting" is again most frequently given as a reason in favour of Physics amongst both boys and girls. The "proficiency" reason hardly appears, nor is the subject often considered to be useful for after life.

A frequent recommendation, however, is its connection with everyday life:

"Physics tells us of many things we should not be ignorant of." "It explains the causes of everyday happenings." "Things which would be a mystery in the home and in other places can be explained by Physics." "It deals so closely with everyday life."

The love of experimenting is another powerful reason recommending Physics:

"Such interesting experiments are carried out, and I like using apparatus." "We have a lot of experiments and a lot of weighing."

Self-activity is the delight here:

"We can do our own experiments." "I can do things for myself."

The fondness for proving things is also in evidence:

"Experiments verify the statements in the text-book." "One does not only listen but proves his objective to be correct." "We can prove what we are told."

There are many who declare their interest in hearing about the great inventors.

Physics is liked, too, because it provides variety and plenty to do, "instead of sitting down to lessons and writing and studying."

Against:

Lack of interest and inability to understand the subject are the predominating reasons against Physics. Amongst girls, lack of interest is mentioned far more frequently than inability. Amongst boys, the two reasons occur about an equal number of times. Dislike due to the feeling that the subject is not useful for life is practically non-existent.

Writing out the experiments, and working out the calculations, seem to be the grounds of considerable disfavour in many cases, and it is often complained that the formulæ and laws are difficult to understand and remember. In this connection, the mathematical side of the work has its influence on the regard in which Physics is held:

"Some of the sums need much puzzling out." "The sums have to be worked out by decimals and these I can't do." "The Arithmetic and Algebra required make it uninteresting."

Physics, apparently, suffers by comparison with Chemistry. The experiments are said to be "nearly all the same, with the same apparatus."

Physics is variously described as "too serious," "monotonous," "puzzling," "mysterious":

"It is dry and not so good as Chemistry." "It is not so much an illustration of the actions that occur in the world as in the case of Chemistry." "It is not very interesting to measure water and solids." "It is very ordinary and everything has to be weighed and measured."

CHEMISTRY.

In Favour:

It is impossible to read through the comments on Chemistry without realising that there is a very general and genuine enthusiasm for the subject.

The fact that the pupil can "do" Chemistry well and gets good marks for it is scarcely ever mentioned. It is always the intense interest of the subject and the love of experimenting which are primarily referred to.

There is no doubt that the subject has captured the imagination of the boys especially.

Great things are expected of it:

"Chemistry is only beginning and in the near future great things will be achieved by it."

"It is a subject you never get tired of—a subject which can never exhaust itself. There is no end to the interest it contains." "It is best

to know a good deal of Chemistry, as it will be the deciding factor in a few years time."

The love of experimenting is, of course, the most frequent reason of all. Boys, unquestionably, take great delight in "mixing liquids and analysing weird substances":

"Up to the present we have not been in the Lab., but seeing the experiments done is enough."

It appeals to the love of watching changes and finding out things:

"I like to find out new substances." "It creates an inventive feeling in a person." "Something in it induces me to go on."

It means self-activity:

"I can find out things for myself and have a great deal of enjoyment in the finding." "I can do it myself and it is therefore easier to remember." "I like to find out for myself what compounds are made up of and I like working with my hands." "I like writing out the experiments because I have done them myself and can remember."

"You do the things yourself and do not have to just listen to lectures. As you do the experiments yourself, the facts remain in your head better." "It gives me a chance to use my own initiative."

But apart from the fascination of experimenting and being self-active, the pupils evidently have a great interest in the subject-matter of Chemistry:

"It opens out scope for careful thought in matters of science and life." "Chemistry gives us an insight into the mystery of things." "It makes us open our eyes and notice things in everyday life." "It deals with the wonders of the world and the marvels of our existence."

Chemistry also gives scope for the love of proving things:

"It gives one the chance to prove by actual experiment what one has learnt in theoretical lessons." "It enables us to prove things stated and not take things for granted." "It is a most practical subject and one can see the why and wherefore of every statement."

Chemistry is commended, too, as a relief from ordinary school work:

"You have experiments which make it more interesting than other subjects, where you just hear the master talk the whole period." "One can find out reasons, regardless of dull text-books." "It does not require the cramming some subjects require."

To some, Chemistry appeals because it contains an element of danger:

"It is exciting. You never know what is going to happen next."

Another recommendation frequently mentioned is that Chemistry can be carried on at home as a hobby.

Against:

Inability to "do" and understand is the reason most frequently given for disliking Chemistry. The lack of interest is not often mentioned.

The inability is mainly in the direction of failing to remember the laws and formulæ:

"It is just a mass of facts and the equations and calculations are hard to understand." "There are too many facts to be memorised and it is merely a matter of learning."

"I get mixed up in the names of gases and chemicals and everything seems muddled." "The practical side is all right but the theory is dull." "It is just a list of facts and laws, with no scope for the imagination."

Like Physics, Chemistry seems to take over some of the unpopularity of Mathematics:

"The equations involve a knowledge of Maths. at which I am poor." "Working out the results and calculations is a bore."

It is surprising, in view of the weight of evidence on the other side, that many find Chemistry "dull and tedious": "We get none of the interesting discovery work—it is merely routine." "It is purely material and there are so many processes."

Chemistry, like Physics and Geometry, is disliked by many girls, because it is "more of a boy's subject."

Other reasons, occurring occasionally, are that Chemistry is "dangerous," "messy" and "objectionable because of the smell of the gases."

In Favour:

BOTANY.

The overwhelming reason in favour of Botany is the opportunity it affords for learning about flowers. The "proficiency" reason is hardly ever advanced. The subject is frequently commended because it is useful, but the usefulness is mainly appreciated as making walks interesting.

Botany is attractive, too, because of its connection with everyday life. This reason occurs very frequently:

"It deals with Nature's wonders which are common everyday things to all." "It connects up lessons with everyday life."

"We are amongst plants and trees every day, and it makes life more interesting when you know about them." "It is interesting to hear of things we see almost every day."

Over and over again Botany is liked because it has to do with Nature. Indeed, Nature is mentioned with something approaching reverence:

"I like all things to do with Nature and her glory."

There is an æsthetic appeal, too:

"It is so beautiful and wonderful." "We are always finding wonderful things that seem impossible." "I like to feel as I walk across the

fields and meadows that I know about the beautiful things around me." " Everything connected with a plant is delightful to learn."

Botany is liked also because it gives opportunity to satisfy the love of experimenting :

" I like to do experiments and finding different things about plants."

The love of collecting is very frequently mentioned :

" It is nice to go into the country and collect and name the plants we see." " It is interesting to collect plants and put them in the correct families."

Botany appeals, too, to many because it gives opportunity for drawing :

" It is nice to draw flowers." " I like drawing and botany is mostly drawing."

Botany seems to have an " accomplishment " value to some :

" If I go anywhere, I like to be able to tell what sort of flowers they are and how they grow." " It is nice to tell one's friends." " It is not very nice to be in ignorance."

Against :

Lack of interest is again the prevailing reason against Botany. Very few complain that they cannot understand the subject, although a fairly considerable number dislike it because of the large amount of drawing required :

" It requires good drawing and I can't draw." " There is a large amount of drawing required and nothing to be proved." " The diagrams are so hard to draw."

It is surprising that the lack of variety is mentioned frequently :

" It is learning the same things all over again." " Every lesson seems the same work and almost the same order and wording."

It is surprising, too, that many say that Botany doesn't appeal to them at all ; that they have no interest in the ways and habits of plants :

" I don't like learning about flowers. It seems so dull to me."

There is, moreover, very strong feeling against what is described as the " killing " of plants :

" It is not necessary to study plants so minutely ; it seems to destroy their beauty." " I prefer to leave the wonders of Nature unsolved for thus they seem most wonderful."

" When I know the different parts of a flower, it seems to lose its beauty." " Flowers are too beautiful to be pulled to pieces." " In Botany there are such horrid things to do and it is not nice to pull flowers to bits."

The names to be remembered cause great difficulty, and are frequent reasons for putting Botany last :

" I get muddled in learning the funny names." " I am not interested in trees and cannot remember their names."

V.—SOME OBSERVATIONS ON THE REASONS FOR AND AGAINST—AND ON THE POSITION OF SUBJECTS IN THE ORDER OF PREFERENCE.

The aim has been, in the foregoing comments, to give a representative selection of the views of the pupils upon the various subjects; copious quotations have been given in order that the pupils may speak for themselves and that the tone of their replies may be appreciated.

A word of caution, however, must be uttered. The number of quotations given bears no relation to the popularity or otherwise of the subject, and the strikingly expressed comments of the few may loom more largely than the unenthusiastic commendation of the many.

For that reason, the impression gained by a perusal of the reasons may not find substantiation in the position taken by the subject.

Comment may here be made with regard to the incidence of the two reasons previously referred to as by far the commonest in the replies, viz., interest, and proficiency, and their opposites.

On the negative side, where there is an operation involved, as in the manipulation of figures in Mathematics, and of words in language study, the reasons "against" generally involve lack of "proficiency."

When, however, the subject concerned has a "content" value, the reason "against" is usually lack of interest—very few pupils say they do not like English, History, and Geography because they cannot "do" the subjects.

The reasons advanced in favour, however, show clearly that interest, when present, is a powerful force and nearly always excludes "proficiency." It is only in Arithmetic that the "proficiency" reason has a clear lead; in the other mathematical subjects, interest is a commoner reason in favour, though not by so great a margin as in most other subjects.

There are obviously two types of interest—the one subjective and the other objective.

In the mathematical subjects the interest is always subjective, in the process the pupil is conducting.

In the literary subjects the interest is mainly objective, in the subject-matter presented to the mind.

It is interesting to notice that in the results of this investigation, the subjects eliciting objective interest are all above the average of popularity, whilst those containing subjective interest only are all below that level.

Chemistry is placed high because it is in the especial position of having both a subjective and an objective interest. Its subjective interest is in the experimentation, whilst, it will be remembered, the reasons given by pupils in its favour showed an intense interest also in its subject-matter.

Space does not allow of a full consideration of the educational implications of the results of this investigation.

They are, however, available for all to use, to help to elucidate present problems and suggest new methods of approach.

The most notable features of the final order and preferences are the low position taken by Mathematics, and the languages, and the high position taken by the " humanities."

It seems likely that the Mathematical subjects are unpopular partly because of their lack of objective interest, and partly because the adolescent mind is not fully developed to the stage when it is easy to think in symbols. It will be seen that Arithmetic is of just about average popularity.

The position of Latin may be interpreted partly as due to the fact that it is taken up by the pupils in Secondary Schools at the next stage beyond the time which is stated to be the best period for drill, viz., 9 to 12. It is possible that by the age of twelve a distaste for methods of a " drill " character has set in, though it is true that Latin attains its highest place among boys in the first year.

In connection with the attitude towards Latin, however, reference must again be made to the almost universal prevalence of the feeling that it is a " dead " language.

This investigation will have achieved one satisfactory result at least if it helps to put Classical masters on their guard against this heresy. They should be on the look out for it and combat it from the first, by introducing as much living interest as possible into the language, by way of derivations, coins, and other " *realien.*"

It would be almost impossible to read through these thousands of replies from pupils without finding that certain thoughts and principles crystallize out as important from the point of view of method.

Six points of general appeal have emerged, and may be briefly mentioned.

The boys and girls in our schools :

(*a*) long for self-activity, as opposed to the type of lesson where the teacher talks all the time ;

(*b*) delight to prove things ;

(*c*) find great pleasure in discussion and argument ;

(*d*) feel the need for variety ;

(*e*) want everything, as far as possible, linked up with the life of everyday ;

(*f*) above all, look for a human interest wherever possible.

This last is the deepest impression of all that the perusal of these answers has left.

Though Chemistry comes first with the boys, the investigation on the whole represents a victory for the "humanities." English, History, and Geography stand high throughout, and it is always because they "deal with people."

More than that, subjects are often placed last because they lack this "human" note:

"We are always hearing about the climate and the hills. It would be all right if they told us about the people living there."

"I think it would be more interesting if we were told of the various habits of the French."

"You do not get much information about the French people and their ways."

The reason for this longing on the part of the adolescent to get into touch with others of his kind far or near, past or present, is not far to seek.

He has left behind his child world, and finds a new interest in adults. One of his strong desires is to be treated as if he were mature, and so he finds human behaviour to be of absorbing interest everywhere. As if he should say: "*homo sum; humani nihil a me alienum puto.*"

APPENDIX I (*a*).

TABLE SHOWING NUMBER OF REPLIES CLASSIFIED.

	Boys in Boys' Schools	*Girls in Girls' Schools*	*Boys in Mixed Schools*	*Girls in Mixed Schools*	*Boys and Girls in Mixed Schools*	*All Boys.*	*All Girls.*	*All Boys and all Girls.*
English	3834	3108	747	584	4581	3692	1331	8273
French	3787	2907	717	573	1290	4504	3480	7984
Latin	2655	1588	297	286	583	2952	1874	4826
History	3746	3010	718	581	1299	4464	3591	8055
Arithmetic	3789	3059	746	575	1321	4535	3634	8169
Geometry	3766	2825	741	565	1306	4507	3390	7897
Algebra	3769	2840	751	579	1330	4520	3419	7939
Geography	3430	2974	726	578	1304	4156	3552	7708
Physics	3506	1250	613	258	871	4119	1508	5627
Chemistry	2764	1482	631	358	989	3395	1840	5235
Botany	—	1833	—	219	—	—	2052	—

APPENDIX I (*b*).

TABLE SHOWING NUMBER OF REPLIES BY AGE-DIVISIONS.

Boys.	12½	13	13½	14	14½	15	15½	16
English	342	452	647	682	738	637	588	495
French	334	451	648	672	728	618	578	475
Latin	230	313	481	490	496	383	319	240
History	340	448	653	678	719	608	556	462
Arithmetic	342	453	651	681	734	622	575	477
Geometry	326	443	646	676	733	606	581	496
Algebra	325	440	641	680	736	619	584	495
Geography	342	453	634	653	687	531	475	381
Physics	297	404	612	640	666	553	526	429
Chemistry	161	238	404	530	631	548	480	403

Girls.	12½	13	13½	14	14½	15	15½	16
English	285	462	578	541	557	455	445	369
French	250	411	540	520	524	444	429	362
Latin	105	212	312	304	316	210	221	194
History	267	439	554	536	550	448	437	361
Arithmetic	267	453	574	539	554	455	432	361
Geometry	233	412	538	516	528	425	409	329
Algebra	213	420	547	517	537	439	412	334
Geography	285	422	577	539	543	442	425	329
Physics	144	236	307	222	224	170	117	88
Chemistry	113	199	274	309	327	268	206	144
Botany	134	258	300	295	298	270	274	223

Appendix II.

Method of performing the necessary calculations.

For convenience it was decided to express each vote as a fraction, the enumerator being the position assigned and the denominator the number of subjects voted upon. Thus, $\frac{7}{9}$, in relation to Latin, means that Latin was given the seventh position out of nine subjects.

It was then found necessary to take the following steps in recording and collating the replies:

(1) The votes had first to be transferred from the 8,000 individual replies to large sheets of paper, using one for each school, separating them into half-year age-divisions and keeping the subjects apart within the age-divisions. Different sheets were used also for boys and girls in the case of mixed schools.

(2) As it was impossible to calculate without taking into account the fact that some votes were out of thirteen subjects, some out of twelve, some out of eleven and ten, etc., down to six, the votes, amounting to about $8,273 \times 10$ (the average number of subjects voted from) had to be separated out into columns, according to denominator, again keeping age-division, sex, school and subject distinct, and dividing off, also, according to enumerator. This involved dealing with well over 80,000 fractions.

(3) These subject sheets (cum school, cum age-division, cum sextype), containing the separated-off columns, had then to be assembled under subjects for each age-division (they had previously been kept together as Schools), keeping boys only, girls only, boys mixed, and girls mixed apart.

(4) The total number of times each subject was 1st, 2nd, 3rd, etc., out of 13, 12, 11, 10, etc., at each age-division in the boys only, girls only, boys mixed, and girls mixed sections had then to be counted.

In reducing this mass of material obtained from the replies to statistical form, one obvious difficulty had to be overcome. This was the fact already referred to that the matter was not homogeneous, i.e., the subjects voted on were not the same for all scholars, and the number of subjects itself varied. The following is the method of performing the calculations suggested by Mr. H. Kennedy, M.Sc. (Dunelm).

In this explanation the word "group" is used to signify all replies, considered together, giving a vote for the same number of subjects (thus the out-of-ten group may be referred to); the word "division" is used to refer to all replies at a particular age (as the 13½ age-division); and the word "class" is applied to such combinations of age-divisions as the all-boys' class.

In every reply a positive or negative score is allotted to each position according to its deviation from the mean position. Thus, on a voting paper placing eleven subjects in order, where the average position is sixth, a mark of +5 is allotted to the first position, 0 to the sixth, —2 to the eighth, and so on.

The replies in any one age-division are then sorted out into groups according to the number of subjects voted on, and for each subject a table such as the following prepared:

	1	2	3	4		5
	Position.	*No. of Replies.*	*Score for Position.*	*Actual Score.* +	*Actual Score.* —	*Possible Score.*
	1	54	+4½	243		
	2	52	+3½	182		
Out of 10.	3	46	+2½	115		
	4	40	+1½	60		
Mean position 5½.	5	39	+ ½	19½		364×4½
	6	35	— ½		17½	
	7	28	— 1½		42	
	8	28	—2½		70	
	9	24	—3½		84	
	10	18	—4½		81	
				+619½	—294½	
		364		=+325		1638

Column 2 indicates the frequency with which the particular subject was placed in each position, and column 3 the score for that position. The actual scores in column 4 are obtained by multiplying the numbers in columns 2 and 3 and the algebraic sum of the positive and negative scores is entered at the foot of the column. In column 5 the greatest possible score that could be earned by this group of replies is found by multiplying the total number of replies by the score for the top position.

Thus from each group two numbers are obtained—the possible score and the actual score.

The respective numbers from all the groups within an age-division are then added, giving the total possible and total actual scores for that division. Then the actual score is expressed as a percentage of the possible score, and the final mark allotted to the subject for the particular age-division is taken as this percentage +100.

For example:

Total Possible Score.	*Total Actual score.*
3150	+1423
100	+ 45·1

∴ Mark for the subject=100+45·1=145·1.

Had the actual score in this example been −1423, the mark for the subject would have been 100−45·1=54·9.

Thus the results come to be expressed on a scale from 0 to 200, 200 being the mark if the subject is placed first by everybody, 0 if the subject is placed last by everybody, and 100 if the subject is of average popularity.

Finally, when the results have been tabulated for all age-divisions within a class, the mark for the class is obtained by simply adding the total possible and actual scores of the several age-divisions and treating the resulting totals as above.

The advantages claimed for this method of calculation are:

(1) It is inclusive, for every placing of a subject has an influence on the final mark allotted to the subject.

(2) By allotting a score to each position depending on its deviation from the mean position it provides a fair method of combining preferences from different numbers of choices, while at the same time giving greater weight to a first choice out of eleven than to a first choice out of seven.

(3) The final mark for each subject is expressed on a uniform and quite definite scale, enabling its significance to be seen at a glance.

(4) The method of performing the calculations is such that results obtained for the smaller age-divisions can be immediately combined by simple addition of possible and actual scores to give the results for the larger classes.

(5) The principles of the method are simple to understand and the arithmetic involved is not excessive considering the mass of data to be dealt with.

The investigator desires to acknowledge with grateful appreciation the valuable advice and helpful criticism he received at all stages of his enquiry from Professor C. W. Valentine.

RÉSUMÉ.

UNE ENQUÊTE STATISTIQUE SUR LA POPULARITÉ RELATIVE DES ÉTUDES DE L'ÉCOLE SECONDAIRE À DES ÂGES DIVERS.

Le but de l'enquête, que l'on rapporte ici, fut de découvrir la popularité relative des différentes études secondaires, et de tirer des élèves leurs opinions sur ces études et sur les méthodes d'enseignement.

On reçut de 8,000 élèves des réponses à un questionnaire et l'article cite un choix représentatif des réponses et donne aussi des tableaux indiquant l'ordre de popularité, groupés par étapes de six mois, et séparés pour les garçons et pour les jeunes filles.

En général le résultat révèle la haute position prise par les études dites "humanités," tandisque les autres faits qui en ressortent sont le besoin que sentent les élèves de diriger eux-mêmes leur activité, de trouver dans leur travail de la variété, des contacts avec la vie quotidienne et surtout un intérêt humain.

ZUSAMMENFASSUNG.

EINE STATISTISCHE UNTERSUCHUNG ÜBER DIE RELATIVE BELIEBTHEIT VON FÄCHERN AN HÖHEREN SCHULEN BEI VERSCHIEDENEN ALTERSSTUFEN.

Das Ziel der hier besprochenen Uutersuchung war, die relative Beliebtheit von Fächern an höheren Schulen mit Bezug auf die Meinungen und Gefühle der Schüler über die Fächer und die Lehrmethoden festzustellen.

Man liess von 8000 Kindern Fragebogen ausfüllen, und der Artikel gibt eine typische Auswahl von Antworten und Tabellen, die den Grad der Beliebtheit anzeigen (nach Halbjahren geordnet und gesondert für Jungen und Mädchen).

Im allgemeinen zeigen die Ergebnisse die wichtige Stellung der "humanistischen Fächer"; andere wichtige Punkte sind, der Wunsch der Schüler, selbsttätig zu sein, Abwechslung, Kontakt mit dem täglichen Leben und vor allem menschlisches Interesse zu haben.

THE PLACE OF PSYCHOLOGY IN THE TRAINING AND WORK OF THE TEACHER.[1]

By J. DREVER.

I.—*Münsterberg's "Psychology and Life."*
II.—*The general relation between psychology and education.*
III.—*The science and the philosophy of education.*
IV.—*Münsterberg's argument and Dewey's reply.*
V.—*Is teaching a profession?*
VI.—*Psychology and the work of the teacher.*

I.—Münsterberg's "Psychology and Life."

In the closing year of the nineteenth century Münsterberg, the successor of William James at Harvard, published his well-known book, *Psychology and Life*, in one of the chapters of which he discussed "Psychology and Education." Münsterberg's views—which he had already expounded at length in certain American periodicals—occasioned a great deal of controversy. His general contention was that the analytical psychological attitude towards a child necessarily conflicts with the sympathetic personal attitude which ought to be the attitude of the teacher, that it is not desirable, therefore, that the teacher should be a psychologist, or indeed, that he should have any detailed knowledge of psychology at all, such psychological facts and laws as have a direct bearing on education being conveyed to him in the form of principles of method through a middleman, the educational theorist. Ten years later, in his *Psychology and the Teacher*, Münsterberg returned to this problem of the relation of psychology to the teacher's work. While he showed clearly that his views had undergone considerable modification during these ten years, he still contended that the study of psychology by the teacher might be fraught with danger, and that in any case psychology in its present state of advancement was not nearly so important for the teacher's work as some American enthusiasts claimed. During the quarter of a century that has elapsed since this book was published the science of psychology has seen an enormous development. Were Münsterberg alive to-day it is almost certain that he would see reason to modify his views still further, at least with respect to the importance of psychology in connection with the teacher's work. The controversy he initiated has long

[1] A paper read to the joint meeting of the Education and Psychology Sections of the British Association at Norwich, 1935.

since died down. Few, except perhaps those who still claim that teachers, like poets, are born, not made—"teachers by the grace of God," as Simon Laurie put it—would now deny the importance of psychology from the point of view of the education of the child. The place that psychology should occupy in the training of the teacher, however, has not yet been determined with any degree of definiteness, and it cannot be denied that some of the points made by Münsterberg have still considerable cogency. I propose, in opening the discussion, therefore, to consider briefly three main problems: (1) the general relation between psychology and education, (2) the place of psychology in the training of the teacher, and (3) the relation of psychology to the practical problems the teacher is called upon to face in the school.

II.—THE GENERAL RELATION BETWEEN PSYCHOLOGY AND EDUCATION.

Education may be defined, admittedly in very general terms, as the process by which the behaviour of the child is controlled and modified, as a result of the influences brought to bear upon him in the home, the school, and the street, so as to produce in the adult a type of behaviour more or less adapted to environing conditions, physical and social, and more or less modelled after an intended and recognized model. So far as the school is concerned—and also to some extent the home—the various influences, by instruction, example, training, are deliberately brought to bear on the child with the aim of producing the desired type of adult. This involves bringing the child into contact with various branches of knowledge, so that he may acquire them, training him in various skills, and so on. Briefly, then, education is the process of developing and modifying a child's behaviour.

What is the relation of psychology to this process? According to modern views, psychology is the positive science which studies the behaviour of living organisms—the child being one—and which seeks to understand that behaviour in terms of the inner life of thought and feeling, which we speak of as the life of the mind. That being so, it would seem to follow that any theory underlying and guiding the education of a child is simply a branch of applied psychology and nothing more.

III.—THE SCIENCE AND THE PHILOSOPHY OF EDUCATION.

This, however, is not quite the whole truth. So far as education is a deliberate process carried out by teacher or parent, it is directed towards a definite end or definite ends. Part of the theory of education, therefore, will consist in an evaluation of ends, and this is a matter entirely outside

the field of psychology, which as a positive science is concerned solely with matters of fact and not with valuation. Hence so far as educational theory concerns itself with educational ends and educational values, its problems are problems upon which philosophy—the philosophy of life—rather than psychology may be expected to throw light. At the same time, even here, psychology may have something to say on the possibility in any given circumstances of attaining the ends sought, and also on the extent to which the results obtained in the school are in reality those aimed at, or those which, taken at their face value, they appear to be.

To put the matter briefly, we must distinguish in educational theory between the philosophy of education and what we may call the science of education, between the consideration of what ought to be our end or aim, and the examination of the actual process of education as presenting a series of events in the life of the child. This science of education is necessarily based on psychology, is, indeed, a branch, as we have seen, of applied psychology. This means in the concrete that when we have determined what our aim is to be, we look to the facts ascertained by the psychologist for guidance as to the best way of attaining it. Not only so, but the conclusions reached by philosophy are academic and abstract until they are interpreted in psychological terms. In fact, to quote words I have used elsewhere, "we can settle hardly any essential and vital question in education, except in a merely academic way, and without reference to practical problems, independently of the science of psychology."[1] It is hardly necessary to say more. From the nature of the case educational theory in any real and practical sense must be founded upon psychology, and the defects of the psychology upon which it is founded will be reflected in the educational theory.

IV.—Münsterberg's Argument and Dewey's Reply.

The problem of the place which psychology ought to occupy in the training of the teacher is a practical problem of the very first importance, the solution of which does not necessarily depend on the conclusion we have reached regarding the relation of psychology to educational theory. Its solution depends to a greater extent on the place, status, and function which are to be assigned to the teacher. In Münsterberg's *Psychology and Life* there is a very curious passage, criticized severely, and it seems to me deservedly so, by John Dewey in his presidential address to the American Psychological Association in the year of the publication of the book. "Do we not," Münsterberg says, "lay a special linking science every-

[1] *Introduction to the Psychology of Education*, page 5.

where else between the theory and practical work? We have engineering between physics and the practical working man in the mills; we have a scientific medicine between the natural science and the physician."[1] He is arguing for the view that the educational theorist—or possibly educational psychologist—is a kind of middleman between the psychologist and the teacher, that the educational theorist " fixes and filters and brings into solution " the material supplied by the psychologist and passes it on to the teacher in a form in which it may be used in his practical work.

Out of Münsterberg's words leaps at once the startling opposition between the status and function of the man in the mills, on the one hand, and the status and function of the physician, on the other. The question is forced upon us: why does this opposition exist, and wherein does it consist? The answer seems to be: the physician practises a profession, the working man in the mills does not. Dewey very pertinently asks: " Shall we seek analogy with the teacher's calling in the working man in the mill or in the scientific physician? " There can hardly be any doubt as to the answer. Teaching, like medicine, ought to be regarded as a profession.

Now medicine is a profession because, for one thing, the physician in his practice deals with the situations he is called upon to face, not by means of cut and dried rules laid down by any intermediary between him and the scientific basis of his practice, but freely and rationally in the light of his own knowledge of basic scientific principles. Not to do this would be to practise quackery. Medicine's sister profession—surgery—was late in attaining the same professional status, because its practice, quite apart from the barber-surgeon and his apprentices, seemed to rely to a much greater extent on rule of thumb methods without any scientific background.

V.—IS TEACHING A PROFESSION?

Using this analogy we are led to some interesting conclusions regarding the teacher's training. However much value is to be attached to the training of the young teacher in the *practice* of teaching and in the routine of the school, there are two things which in the interest of his professional status we dare not sacrifice to such practice during the years of training. One is a high level of scholarship and culture in the teacher, whether his profession is to be exercised in the primary or in the secondary school. He must be in a real sense himself an educated man if he is to educate our children. This is not the place to deal with the various problems that arise

[1] page 138.

at this point, but it appears obvious that a sixteenth-century culture may not be a satisfactory culture for the twentieth century. The other thing we dare not sacrifice is that scientific basis of teaching practice in psychological knowledge, which will make the teacher's dealing with the situations of school life, whether they are those of instruction or those of discipline, intelligent and rational.

This by way of an aside! There is at the present time, in Scotland of all places, a movement with respect to the training of teachers which will make the attainment of a university degree by the women teachers more difficult, and which will tend to interfere greatly with the development in the teacher of a genuinely scientific outlook on education. Such a movement, whatever be its motive, is definitely retrograde and hostile to every true interest of the teaching profession. Its tendency is all towards making the primary teacher, so to speak, a mere hewer of wood and drawer of water, or a mere worker in the mill, if you like, with neither intellectual interests nor scientific and professional interests, the slave of a school routine dictated from above. It may appear an advanced, and even heretical, view, but it seems to me that the teacher will never have his professional status fully recognized until every teacher is a university man or woman with a sound education, both general and in the scientific basis of his or her profession, and that to sacrifice this in any way to training in the practice of teaching and the routine work of the school is a profound mistake. This is not belittling the value of practice in its proper place.

The concession of the claim that teaching must be regarded as a profession will depend, of course, on the recognition of the importance of the function of the teacher, as well as on the kind of education the teacher obtains. To the man in the street school education presents itself as a process of acquiring certain skills and certain kinds of knowledge—reading, writing, counting, with certain facts about history, geography, and physical nature. Even on this narrow view of education and the teacher's function, the mere technique of teaching is in itself insufficient to secure real efficiency as a teacher. There are individual differences in learning ability, in interests, in inhibitions, emotional and volitional, which it is essential that the teacher should understand, and a by no means negligible knowledge of psychology is necessary for such understanding.

Educational thought in this country is long past the stage at which it was considered that in the teacher knowledge of the subject to be taught was all that mattered, and that learning in the child was a purely mechanical process, which depended, it is true, to some extent on the

child's willingness to learn, but was in the main a matter of mechanical repetition. The best educational thought now recognizes also that education must be regarded primarily as the teaching of a child, and not the teaching of this or that subject to a child. As soon as we regard education in this way we have reached a standpoint from which the whole nature of the problems facing the teacher becomes clear, and at the same time the function of the teacher in a modern civilized society is revealed in its fullest significance. In order to educate the child the teacher must understand the child. In order, therefore, to teach the child, say, Latin, the teacher must know Latin and also the psychology of the child. But that is not all. The teacher's function does not stop at the teaching to the child Latin, or geography, or any other school subject, or group of subjects. The whole character and personality of the child are involved in his education, and thus his future efficiency as a member of the adult community. It is at this point that the real significance of the teacher's function forces itself upon us. Every argument in favour of a wide and sound scientific basis in the training for the medical profession holds with redoubled force in the case of the teaching profession. *Mens sana* is not less important than *corpus sanum* in the adult member of the community, and the complexity of the mental life is even greater than the complexity of physical processes in the living body.

One other point in this connection. To say, as Münsterberg appears to say, that rational insight in the teacher will militate against that enthusiasm which is so vitally necessary is the merest sentimental babbling. Münsterberg indeed is himself to all appearance far from clear as to what precisely enthusiasm in the teacher means, and as to its function in education. An enthusiasm for literature, or the classical languages, or whatever subject he is teaching, the teacher may by the contagion of feeling communicate to his class. That is all to the good. What is of still greater importance, however, is enthusiasm for the work he is doing, enthusiasm for education itself, and not a mere sentimental or emotional enthusiasm but an enthusiasm based on rational insight and understanding.

VI.—PSYCHOLOGY AND THE WORK OF THE TEACHER.

We now come to the third of our problems—the bearing of psychology upon specific practical problems which the teacher is called upon to face in his school work. Here it is necessary, owing to the shortness of the time at our disposal, to be as brief as possible. In his presidential address, already referred to, Dewey maintains that the chief weakness in teachers at the present time, apart from sheer incompetence, is the

tendency to react *en bloc* to the child's behaviour considered *en bloc*, without any attempt at the psychological analysis of that behaviour. It is this, he says, that makes the teacher "resort to purely arbitrary measures," or "fall back upon mere routine traditions of school teaching," or "fly to the latest fad of pedagogical theorists, just as the old physician relied upon his magic formula." And he goes on to say: "Teachers tell you that a child is careless or inattentive in the same final way in which they would tell you that a piece of paper is white." This is very much to the point. The teacher who would deal effectively with symptoms like inattentiveness or carelessness must know what they are symptoms of in the individual case. The same is true as regards the child who is rebellious, or timid, or over-anxious, the day-dreaming child or the stammerer. So of the child who experiences special difficulty in learning to read or to write, the child who is specially weak in spelling or in arithmetic. Everywhere in school practice the story is the same. Everywhere the first essential for effective dealing with the child is an understanding of the psychological situation.

Someone may say that in theory this has always been recognized. In practice, however, teachers have again and again asserted that they have found it impossible to apply in school—at least to any significant extent—the psychology they were taught at college. And this argument is frequently urged against the claim that psychology should be assigned a fundamental position in the training of the teacher. In such cases the fault is clearly either in the psychology they were taught at college or in the failure of teachers, through laziness or indifference, to apply the psychology they were taught. It is true that the older philosophical psychology afforded little assistance to the teacher, where it did not actually mislead him. But that psychology is definitely a thing of the past. Present-day psychology is in an entirely different position. There is neither the necessity nor the time to elaborate this point. Apart from a general knowledge of the mental life, approached from the concrete and experimental point of view, it is obvious that the psychology of individual differences has an important bearing on the work of the teacher, if only to make him realize the futility of attempting or expecting the impossible. It is obvious also that the new psychology of feelings and motives, including at least some of the work of the psycho-analytic school, is capable of illumining many dark places in dealing with the child. So, too, as regards the psychology of learning, the psychology of the school arts of reading and writing, and so on. For an educational psychology in the sense of a simplified psychology for teachers, with all the real scientific psychology left out, I have no use.

RÉSUMÉ.

L'IMPORTANCE DE LA PSYCHOLOGIE DANS LA PRÉPARATION ET DANS LA TÂCHE AU PROFESSEUR.

La considération du rapport entre la psychologie et la tâche ou professeur renferme trois problèmes principaux : (1) celui du rapport général entre la psychologie et la pédagogie ; (2) celui de l'importance de la psychologie dans la préparation du professeur : (3) celui du rapport entre la psychologie et les problèmes pratiques que rencontre le professeur dans l'école. Quant au premier problème, le seul point de vue admissible c'est que la théorie pédagogique doit se fonder sur la psychologie. À l'égard du second problème il est évident que, si le professeur doit être considéré comme exerçant une profession, il faut que sa préparation comprenne, comme celle du médecin, des connaissances suffisantes de la base scientifique de sa pratique professionnelle. Il est facile de trop insister sur le côté pratique et sur l'entraînement dans la routine de l'école. Pour ce qui est du troisième problème, puisque, pour traiter effectivement l'enfant à l'ecole, l'essentiel est de comprendre la situation psychologique, le professeur dépend à tout moment de ses connaissances de la psychologie, et surtout de la psychologie dans son développement moderne.

ZUSAMMENFASSUNG.

DIE STELLUNG DER PSYCHOLOGIE BEI DER FACHMÄNNISCHEN AUSBILDUNG UND DER ARBEIT DES LEHRERS.

Eine Betrachtung des Verhältnisses der Psychologie zur Arbeit des Lehrers enthält drei Hauptprobleme :

(1) das allgemeine Verhältnis zwischen Psychologie und Erziehung,

(2) die Stellung der Psychologie bei der Ausbildung des Lehrers,

(3) das Verhältnis der Psychologie zu den praktischen Problemen des Lehrers in der Schule.

Was das erste Problem angeht, so ist die einzig mögliche Ansicht, dass die erzieherische Theorie eine psychologische Grundlage haben muss. Was das zweite Problem anlangt, versteht es sich von selbst, dass, wenn Unterrichten als ein Fach anerkannt werden soll, die Ausbildung des Lehrers wie die des Arztes eine ausreichende Kenntnis der wissenschaftlichen Basis seiner fachmännischen Praxis einschliessen muss. Die Praxis im Unterricht und im gewohnheitsmässigen Gang der Schule kann leicht überbetont werden. In Hinsicht auf das dritte Problem ist folgendes zu sagen ; seit die Hauptsache für die zweckmässige Behandlung des Kindes in der Schule das Verständnis für die psychologische Lage ist, ist der Lehrer beständig auf seine psychologischen Kenntnisse und besonders auf die Psychologie in ihrer modernsten Entwicklung angewiesen.

PSYCHOLOGY IN THE TRAINING OF TEACHERS.[1]

By A. W. WOLTERS.

I.—*Functions of a post-graduate course in education.*
II.—*Recognition of the interest and value of psychology.*
III.—*What psychology do teachers need?*
IV.—*Summary.*

I.—Functions of a post-graduate course in education.

I am speaking from the standpoint of the university post-graduate training system. Previously I had adequate experience of the two and three-year concurrent systems, and it is important to recognize that the problems of training are very different under the post-graduate system. The students have learned to read, are sometimes rather tired of the university, and in consequence impatient of instruction. The extraordinary politeness of the student may mask these facts, but one teaches most successfully by recognizing them. I have found it not only safe, but best to assume a very high speed of learning, and I am continually surprised by the amount which these trained young minds can absorb in a limited time. But the time *is* limited. The nominal year falls away on inspection to two-thirds of a year, of which a large part must be devoted to school practice. In the short time which remains there can be no question of training psychologists: we have only to consider whether it is worth while to include a certain amount of psychological information in a necessarily congested curriculum.

The answer will be governed by our conception of what we expect the training year to do. The practical side is of obvious value and need not be mentioned further. But the theoretical side of the course requires justification as a whole and in detail. In my opinion the greatest value of the year lies not in the content of the course, but in the opportunity and stimulus to think professionally. It should be a period of self-orientation to the profession which the students are about to enter. No teacher will emerge from the ruck who is not something of a philosopher, and so I hold that the best a training course can do is to stimulate thinking, to demonstrate that there are right principles in professional practice, and to show to rather sceptical and cynical post-adolescents that teaching is a profession worthy of an intelligent man's devotion. They also have to be shown that the content of the course is intellectually respectable.

[1] A paper read to the joint meeting of the Education and Psychology Sections of the British Association at Norwich, 1935.

So I regard the selection of topics for a curriculum as properly made with regard to their mental provocation rather than to their applicability in practice. If the content is practically useful, so much the better. But it is not necessary that all educators should possess technical knowledge so long as some do : it is essential that all should have thought fairly deeply about some aspect of their work.

As a psychologist I naturally think that the one and only sound foundation for educational theory and practice is psychology. Having been a philosopher at an earlier point in my career, it is equally natural for me to admit that the philosophical discussion of educational values is not without interest. Add the acquisition of practical skill, and what more do you require? I was reluctant to conclude in this *a priori* way that all intending teachers must take a course in psychology, so I persuaded the Education Department of Reading University to send a circular to former students who had left from two and a half to five and a half years before. I thought that from two to five years' experience would enable them to judge the value of their course. There was the usual wastage and I obtained only forty-five replies, but these were for the most part candid and explicit.

II.—Recognition of the interest and value of psychology.

I asked first whether they had found the course interesting. Forty-one replied that they had. Two have since lost interest in the subject, but two of those whom I bored have since found it interesting. We may say, then, on the figures that students find the course interesting. Their letters prove that they find it very interesting, for they speak in terms so glowing as to be disconcerting. Its content provides the science graduates with something akin to their former studies, while they seldom take gladly to the philosophical discussion of educational theory, and have no liking for the history of education, perhaps because they have no background of general history to illuminate it.

I next asked if psychology had seemed to them important at the time, and if they had since changed their opinion. Only twenty-six had thought it important, and one of these has changed her mind. But nine of those who regarded it lightly have since learned that it is important. Two remarks seem justified. The relative figures suggest that the interest in the subject is primarily intellectual and not professional. But sooner or later 75 per cent of those who replied found that the subject was of importance to them in their work, and state this opinion with great emphasis.

What have they gained from it? I put my question in double form, to cover both additional professional insight in general and assistance in detail. Most of the answers are disappointingly vague and uninformative. The writers may be firmly convinced that they have profited greatly, and yet fail to discover how. Some realize that psychology has helped them to a better orientation to their work. One says, " It helps me to keep out of the rut. It has provided a background which I value most as a result of the course." Another says that his interest in his work is more intelligent than it would otherwise be. One is more specific, saying, " I am glad I learned enough psychology to be interested in inconspicuous children." I should like to refer especially to two people who have left the profession. One has gone into industry as a research chemist. He still gives psychology a high place in his professional equipment, and urges that psychology should be a major subject in education at large, since a successful life depends mainly upon the efficiency of our contacts with other individuals. The other is training for the ministry, and is disposed to ascribe the change in part to our subject. "Among the influences which brought me while at Reading to a saner and better-thought-out view of life the study of psychology played an important part."

A few replies hint in this manner that they really meant it when they said that they considered psychology important. The rest excite doubt. But happily all doubts are removed when we come to the last request in my letter. I invited criticism and suggestions for the improvement of the course. Naturally some diffidence is shown. Some are too modest or too polite and kindly to offer their views with any fulness. There is, however, sufficient material for our enlightenment. On certain points there is a little difference of opinion, but on some the writers are unanimous. A few would like the course more definitely related to teaching and class-room problems, but the majority prefer it to be one in general psychology. " You were wise to give a course on pure psychology, and not to create a sort of nostalgia due to a surfeit of education pure and applied." Some suggest a double course, to cover both general and educational psychology. Difficulties as to time available are boldly met. Make it a major course. Make it 75 per cent of the whole course. Give more experimental work. And so on. I think they are right; educational psychology implies a foundation of general psychology, and I agree with my students that the proper line of approach is to sketch psychology at large, illustrate it from educational material, keep in mind the future profession of the students, but to leave the application mainly to them. Above all, let us avoid the abomination we used to know as " psychology for teachers." The most practicable method of doing this is to rely upon

a good general text-book (for preference one also used in degree courses) and a few discussions on topics which bring up the structural principles of psychology most clearly.

III.—WHAT PSYCHOLOGY DO TEACHERS NEED?

But this is very general. More specifically they demand that the chief emphasis of the course should be upon problems of development and personality. Their experience has already taught them that it is chiefly here that they need help. We have all noticed the avidity with which students listen to accounts of Child Guidance work. I have never stressed that side, because its appeal is too romantic to young, inexperienced and altruistic students. But these letters are another story. They are definite appeals for help, supported by case histories. What they were unable to make clear when asked how psychology had helped them is revealed here in their insistence that most of the work should be concerned with personality problems. Most of the topics which during the past quarter of a century have been treated in the *American Journal of Educational Psychology* they reject as irrelevant to their work. They are prepared to believe that problems of memory, attention, fatigue, are scientifically interesting, but with one or two exceptions they think they will teach well enough without studying them. Other topics, and more momentous, such as the consequences of accepting or rejecting the Spearman theory, they pass over for a different reason. It will be a long time before they will be at liberty to make decisions on policy, and they will for the present work mainly under direction. They feel that they might postpone study of the greater issues, and some suggest a course of psychology after a few years' teaching. Most think that mental testing has little bearing upon their daily work. The field in which they are free agents is a small one. But they, more than higher authorities, make personal contacts, and here they wish for help. They are not troubled by what we used to call class discipline, that is, the suppression of riots. They are troubled by individuals. How should one deal with the maladjusted child from the special home? What do you do with the child who wishes to be noticed, and will obtain notice if necessary by misbehaviour? How should I deal with a boy who has been remitted to a school of lower grade in consequence of a conviction for larceny? Then there are the ordinary cases of refractory children. They do not ask for instructions for dealing with the cases, just as one said they do not desire a set of formulæ for getting knowledge into dunderheads. They wish to understand the cases. They have come to realize the importance to them

of the child's out-of-school background and want to know more of it. And in passing let us note that to these still very young teachers the thief and the liar are not just moral outcasts, but tasks lying to their hands. Psychology deserves some of the credit for this change of attitude.

In the longest and most interesting of my letters this passage occurs: "One rather important grouse 'in the light of my experience.' I never remember being warned that some of the very urgent problems of teaching would occur not in the classroom but in the staffroom. I am in a junior girls' school, and it isn't always easy for eleven women shut up together for the working days of the week for fairly long periods together to preserve peace and concord. In fact I very much fear I have sadly belied the kindly testimonial that said that I was 'an agreeable colleague' on more than one occasion." She is not the only one who thinks that the psychology of teachers should be included. Put this new demand against the discovery that children in classes do not behave as they do individually, and we see that what our deponents really assert is that educational psychology is a branch of social psychology, and that this is the best avenue of approach. I am prepared to accept their positive demands, but not their negative ones. They do not realize how difficult and risky a task they are setting their instructors. They overlook the possibility that their outlook might be different if they had received no more than they ask. They say they are willing to accept the psychologist's conclusions without spending time on the processes by which he establishes them, but how long would they continue to accept dogmatism? There must be some general cognitive psychology, there must be a demonstration of the psychologist's technique in some field where his methods can command the respect of the science graduate. Then we can recognize that for teachers the road to educational psychology lies in the territory cultivated by Professor Burt, Professor Bühler, and Dr. Isaacs. Thorndike's kingdom can be left to the psychologist proper.

The course suggested therefore falls into two parts. There is the background of general cognitive psychology with a limited demonstration of methods. The rest deals with development. Throughout it should be emphasized that the child is a reacting organism, and that learning is secondary to behaviour, a special case of reaction to environment. There must be a full analysis of the springs of action, and probably in this country we shall continue to base this upon the work of McDougall, even if that author should not always approve of our exposition. We must take into account psycho-analytic discoveries, but the less display we make of psycho-analytic theory the better. This is a spring from which one must drink deeply or not at all, and there is too little time available.

Then cautiously we have to deal with the difficulties which children commonly encounter when growing up, and study the play of forces upon them in and out of school. This is the outline of a sufficient syllabus and is based as much upon the experience of the teachers as upon that of the psychologist. It can be summed up in a phrase. It must be a psychology of real human beings and not of bloodless abstractions. These teachers have asserted that they would be grateful for any help that can be given them on this line. Their opinions support those who responded to Miss Phillips' enquiries in 1931.[1]

IV.—SUMMARY.

(1) A questionnaire was addressed to young teachers trained in a University Education Department. On the whole they reported that they were and continue to be interested in psychology, and most of them regard it as valuable to them in their work.

(2) Their statements suggest that while the syllabus should include the psychology of learning, with demonstrations of experimental methods, it should deal more fully with the psychology of development and personality. It is in this field that teachers encounter their most difficult problems.

(3) Educational psychology is to be regarded as a branch of social psychology. Further, the course should not be too narrowly or exclusively professional.

RÉSUMÉ.

LA PSYCHOLOGIE DANS LA PREPARATION DES PROFESSEURS.

Le côté théorique d'un cours de pédagogie pour étudiants diplômés devrait les provoquer à méditer profondément sur leur profession. La valeur pratique possible d'un tel cours, quoique importante, est subordonnée à ceci. La psychologie prétend satisfaire à ces deux demandes.

De jeunes professeurs déclarent qu'ils s'intéressaient, et qu'ils s'intéressent encore, à la psychologie, la trouvant utile dans leur travail. Leurs déclarations indiquent que le programme, tout en comprenant la psychologie des moyens d'apprendre, avec des démonstrations des méthodes expérimentales, devrait s'occuper aussi, d'une façon plus étendue, de la psychologie du développement et de la personnalité. C'est ici qui les professeurs rencontrent leurs problèmes les plus difficiles. La psychologie pédagogique devrait être considérée comme une branch de la psychologie sociale. De plus le cours ne doit pas être trop étroitement, ni exclusivement, professionnel.

[1] *B.J.Ed.P.*, Vol. I, pp. 225 ff.

ZUSAMMENFASSUNG.

PSYCHOLOGIE IN DER LEHRERAUSBILDUNG.

Der theoretische Teil einer Arbeitsgemeinschaft für Erziehung, die für solche Studenten bestimmt ist, die bereits ihre wissenschaftlichen Prüfungen hinter sich haben, sollte die Studenten anregen, tief über ihren Beruf nachzudenken. Der mögliche praktische Wert des Kursus ist zwar nicht unwichtig, kommt aber erst in zweiter Linie. Die Psychologie behauptet, jedes dieser Kriterien zu erfüllen.

Junge Lehrer berichten, dass sie für die Psychologie Interesse hatten und noch haben, und die meisten von ihnen betrachten sie als wertvoll für ihre Arbeit. Ihre Aussagen lassen denken, dass, obgleich der Arbeitsplan die Psychologie des Lernens mit Demonstrationen experimenteller Methoden einschliessen sollte, er sich eingehender mit der Psychologie der Entwicklung und der Persönlichkeit befassen müsste. Gerade auf diesem Gebiet stossen die Lehrer auf die schwierigsten Probleme. Erziehungspsychologie ist als ein Teil der Gesellschaftspsychologie anzusehen. Ferner sollte der Kursus nicht zu eng und ausschliesslich fachlich sein.

THE PLACE OF PSYCHOLOGY IN THE TRAINING OF TEACHERS.[1]

By A. LLOYD-EVANS.

I.—*The training of teachers thirty years ago.*
II.—*The introduction of psychology into the training course.*
III.—*Present-day conditions.*
IV.—*An enquiry as to students' views of the value of psychology.*
V.—*Some limitations and difficulties.*

Before accepting the invitation to read a paper on this subject I made it quite clear that I had no claim to speak as a psychologist, and that any contribution I could make arose from the fact that I had had long experience—I might almost say lifelong experience—in the training of teachers. Anything that I say will be limited to my experience, that is, to the training of *women* for *elementary schools*, mainly in the *two-year* course.

I.—The training of teachers thirty years ago.

As I look back on a day, now more than thirty years ago, when I first took charge of training college students, I see a community of girls all striving to learn the same thing in the same way. The ideal was the acquisition of knowledge of, first, a certain closed body of information and, secondly, a certain fixed way of imparting it.

The academic work was entirely divorced from the professional. The duty of the lecturers in history, geography and the rest was to impart to the students the requisite amount of information in all the school subjects to which their own meagre education had barely introduced them. It was not the main business of the subject lecturers to concern themselves with the training of the students in teaching. The whole of the work in both the theory and practice of teaching was handed over to an omniscient being known as the "Master of Method." He it was who lectured in what is still called the principles of teaching, which to him meant *mainly* the methods of imparting information, together with a study of school organisation. Underlying this was the idea that the technique of teaching and discipline was something definite and fixed which could be learnt in a college classroom and then applied, almost without modification, in a practising school: there was a method of teaching the uses of mountains: there was a method of dealing with an obstinate child.

[1] A paper read to the joint meeting of the Education and Psychology Sections of the British Association at Norwich, 1935.

Lest you think that I am exaggerating, let me give you an example of the examination in practical teaching as it actually took place. At the end of the first year and at the end of the second the power of practical teaching was examined. Every student prepared under the direction of the master of method three sets of elaborate notes—100 students, therefore 300 sets of notes; it seemed as if every possible field was covered. Having prepared these notes with most meticulous care the students set about practising the giving of their three lessons—early morning and late at night they practised on each other until they knew them by heart; of course it was natural that they should give each other a hand, but there was more in it than that. The second year students, in addition to having to be ready to give one of their own three *prepared* lessons, had at a moment's notice to give what was called an *impromptu* lesson on any subject they were asked, hence this custom beforehand of taking advantage of the chance of hearing all possible lessons.

I remember so well those dread days of examination; in the morning four or even six inspectors walked in in a solemn row and took up their places in two rooms behind large tables, the students came in in a line trembling and each anxiously offered her three sets of bulky notes. The Chairman of the Inspectors took them, marked one set with a red pencil and handed it back with "take this lesson"—the student hurried out, collected her little flock, marched them into a draft circle, and began. After a time the voice said "that will do," and she marched her children out again—but she returned and stood before the table and listened for the order she had dreaded for two years: "Take 'uses of fractions' or the 'perfect tense' or the 'use of the decimal point,'" or some such delight. Her class was now marched in for her—she was not allowed to go out of the room lest she should seize the opportunity hastily to consult someone behind the door or to look at a book. She was, in fact, assessed as a teacher on her ability to recall at the word of command some portion of the body of knowledge which had been scheduled off as suitable for all children at a given age, and for her correct method of presenting it.

The aim thus was to produce a finished article—in fact, a *trained teacher*. The students who left a training college felt that they had received their preparation for life, and knew their job. If they had not done so the master of method would have felt that he had failed. After all, he was sending out students to a world where books and further opportunities of learning were few, and where the young teachers' need would be for ability to handle large masses of children—think of it, sixty

to ninety in a class—to manage them with military precision and teach them, as it were, the rules of a highway code.

II.—THE INTRODUCTION OF PSYCHOLOGY INTO THE TRAINING COURSE.

It is interesting to trace the process by which the master of method has been deposed and the ideals which he held transformed—in short, the process by which psychology has come to hold its present place in the training college.

First, there came what I call the stage of Sully's Teachers' Psychology. This did mean an attempt to explain the technique which was being acquired; it was concerned with intellectual development; it dealt with the laws of mind. But sometimes it was handed out to the student by lecturers who themselves might not be psychologists and who often knew little more than what was in the book.

Side by side with this development came the growth of child study, especially with regard to the infants' teacher under the influence of Froebel and the kindergarten movement. In the training colleges this child study was largely empirical. It was clearly a step in the right direction, for it was based on the observation of children, but the lecturers who were the pioneers had seldom themselves had opportunity for a training in psychology. They were teachers; they were not psychologists.

Thirdly, there came a stage when the lecturers in education in the training colleges were psychologists rather than teachers. As the study of psychology developed in the universities, the training colleges tended to appoint as lecturers in education young graduates with academic training in mental and moral science who had had little or no experience in schools. This recognition of the value of a training in psychology was again a step forward.

III.—PRESENT-DAY CONDITIONS.

But there is yet a fourth stage in the transformation of the master of method: to-day he has disappeared. We have no longer any *one* member of staff who is responsible for a subject called "the Principles of Teaching." The place of the master of method in a training college to-day is taken not by one lecturer, but by the whole staff, who regard themselves as a body of women whose primary concern is with the preparation of students for teaching, though among them, of course, the lecturers in education take a place of special importance.

The lecturers in education are university women who have both an academic knowledge of psychology and are also students of their own pupils and of children—who are, in short, teachers.

The subject lecturers are university women with special knowledge of their own subjects who have studied psychology as applied to the learning of those subjects, both by students and children—who are, in short, teachers.

It is through this change in the type of woman who teaches in training colleges that the change in the place held by psychology has come about; it is this change, too, which gives hope for the future. The lecturers are teachers, and for that very reason, as they understand their job, they are learners also. For them there does not exist a fixed body of knowledge or one stereotyped method. The training colleges know now that they have not found the ideal way of training teachers. They are staffed by people who are constantly struggling to bring their work into closer accord with the laws of development and are willing that their plans shall be changed or give place to better.

IV.—An enquiry as to students' views of the value of psychology.

It may interest you to hear the students' own views on the place of psychology in their training, though it must be borne in mind that their judgments are of necessity very immature. Through the help of my own staff and of psychology lecturers in other training colleges I have collected some valuable information from young teachers who were asked to state what use their study of psychology during their course of training has been to them in their work in schools. I also asked the 135 students who left my own college in July to sit down one day for an hour in their classrooms and answer the following questions.

The students were asked to write anonymously on the use that the study of psychology had been to them in:

(*a*) The understanding of themselves;
(*b*) Their relations with others;
(*c*) Their attitude towards children.

(*a*) First, the understanding of themselves. This is obviously of fundamental importance. It is of this, too, that the students can speak from first-hand knowledge.

The first point that struck me in reading their answers is that the effect of their study of psychology is positive and great. There is a marked difference between the stronger and weaker students, but a very small proportion is unaffected. The study has a disturbing effect which

the better student welcomes because she is stimulated to valuable self-analysis, but of which the weaker student is afraid.

To the better, it means, first, greater self-confidence, through the discovery that their own weaknesses are not peculiar to themselves; secondly, greater knowledge of their own motives and hence the opportunity for conscious self-training. The better student feels that her introspection can be saved from morbidity because it can be carried on with an impersonal attitude.

Thus one student says: "Before studying psychology I had been inclined to regard all my weaknesses as something quite peculiar to my own nature; now I realise, somewhat to my surprise, that others share the same tendencies and have the same difficulties to combat."

Another writes: "In understanding in some small way the reasons for my own behaviour and attitude I feel better equipped and more confident to teach and control the lives of the children I shall meet in school."

Another is less confident. She says: "So far, psychology has not succeeded in making me understand myself. Perhaps I am not far enough away from its freshness and new interest to judge."

Another remarks: "Psychology by arousing my curiosity and strengthening my imagination has helped me to anticipate results with greater accuracy—by arousing my curiosity and bringing into play my critical faculties it has led me to set a much higher standard for myself and has made me profitably dissatisfied."

The weaker student dislikes introspection; she is afraid of mental discomfort. She dislikes being shaken out of complacency; she is not prepared as a stronger student says she is, to "feel worse before she gets better."

One student says: "I do not believe that psychology has been beneficial to me; it leaves me in an extremely uncomfortable mental condition."

Another: "I think the study of psychology has been inclined to make me make excuses for my behaviour owing to the fact that I can say it is a *natural* tendency."

Another remarks: "The study of psychology has made me dissatisfied with myself but at the same time it has not helped me to make any improvement."

While yet another complains that: "Psychology brings a great deal of interest into life, but takes away much mental comfort. I find I am not quite so sure in my own mind of many things as I was before I started to study psychology."

Yet there is little in the effect on the weaker student which to an adult does not seem valuable. At worst, where resistance has been set up, the strong feeling roused may be of value in the future if not now.

There is no doubt that students do develop during their two years in college—they gain in poise, in self-control, in power of self-criticism. We are sometimes inclined to put this down entirely to the general circumstances of college life and to their own increase in age, but I think that no one could read the statements of these 135 students—which, no doubt, because anonymous, are transparently simple and sincere—without feeling that their study of psychology has been a factor of fundamental importance in their own lives—and, therefore, for their teaching.

(*b*) The second heading under which the students were asked to write was their relations with others. Here the papers show a remarkable measure of agreement. Almost without exception the students say that they have gained an increase in tolerance, in sympathy, in the understanding of the moods of others, in power to live in a community.

(*c*) Thirdly, the students were asked to write of their attitude towards children. Here I feared that I should find vaporising and dogmatism. But I was thankful to discover that they speak with hesitation, conscious of their own lack of experience, and showing an honesty and humility in marked contrast to the cocksureness of the teacher trained under the old plans, who felt in any question of her professional life that it was her duty to appear infallible. But while they recognise, as one of them says, that " in a few years time, when I have had more chance of practical application of psychology in relation to children, I shall be prepared to state at greater length what use the college course has been to me," there are certain points on which they are clear :

(1) The rousing of greater interest in children through having been taught to watch them ;
(2) The growth of patience and tolerance towards children ;
(3) The greater understanding of the *interests*, *play* and *difficulties* of children.

In short, the students say in one way or another that they have learnt to look upon children as individuals.

I was myself delighted to find that even our immature students are thinking of their psychology as that which helps them in their dealings with normal children. One, indeed, says " there is danger of trying to find abnormality and unusual things and making strained explanations in psychological terms." But the great majority evidently consider, as some actually state, that their psychology will be the background of all their ordinary school work, while in the case of unusual children their

psychological knowledge will be brought into the foreground of their minds and consciously employed. The idea of the management of the abnormal and difficult child, while naturally there, is not their main thought.

I have had many points made by the students emphasized in the letters I have received from teachers who have left their various training colleges in varying years. I wish I could quote largely from them for they are most interesting but time does not allow me to do so.

So much for the students' comments on the effect of their study of psychology on their attitude towards themselves, towards their companions and towards children. Some also remark on the help they have gained for their academic work. They say that they can learn better: they have learnt to use their time more economically and to organise their work, and have discovered sounder methods of memorising.

So psychology has come to permeate the atmosphere of a training college. It is true now to say that without psychology there would be no reason for our existence.

V.—SOME LIMITATIONS AND DIFFICULTIES.

The change in a single generation has been almost incredible, but we are still far from the goal. There are, moreover, certain inevitable limitations to our work.

First, we are dealing with very young students—young in years, and remarkably young in experience, since now they all come from the relatively sheltered and uniform environment of the secondary schools. For this reason I should welcome an increase in the use of the simplest psychological illustrative experiments, in order that the students might have first-hand evidence to work on. I have always wished that some central laboratory might be available so that students might be made aware of what is being done. Our students are not speculative thinkers: the more the material for their thought is concrete and practical, the more thinking there will be.

This limitation set to our work by lack of time and the students' inexperience is in the minds of those who to-day advocate a general lengthening of the training college course. But I myself believe that far more valuable than a continuous three years would be a scheme by which students would return to their college after a few years' teaching and then complete their course. Such a scheme would not only benefit the individual students but also the college as a whole, for it would strengthen its links with the actual problems of the schools and the world and would

mingle an atmosphere of maturity with the youthful atmosphere of the training college as it is to-day.

The second inevitable limitation which is felt by us as an even more serious difficulty lies in the demands which will be made on our students in the schools. True, the advance in the last thirty years has been enormous, but the very progress that has been made sometimes blinds public opinion to the existing facts. Again and again it seems to us that the very psychological truths on which the training colleges insist are belied by the conditions in which the majority of students later find themselves. We teach the importance of environment for children; they work too often in a building not only devoid of beauty but actually sordid in detail. We say a child needs space for movement whether at work or play; they find fifty active, eager little boys together, tightly packed in desks. We teach them to deal with individuals; they are sometimes asked to manage as many as fifty babies in the mass. At times we feel that if the place of psychology in the training college were smaller the student's lot would be a happier one.

But that is only in our pessimistic moments. Sometimes we are cheered by some outward evidence that the progress made is real. Think of all those thousands of children gathered together from every part of London at the King's Jubilee. Much was said about the wonder of the organisation, and, indeed, all praise was due to the organisers. But I wonder if the world saw the significance of those vast gatherings—there 70,000 children were not a mass—they were 70,000 individuals whose relationships with their teachers in the classrooms had made those great assemblies possible. Is it too much to say that psychology in the training colleges has had some vital share in bringing about the change by which 70,000 children, happy with their teachers, could enjoy themselves in ordered freedom?

For the change at bottom is a change in relationships; and on the evidence which I have brought before you it is clear that the study of psychology is helping to change the relationships of students in the colleges: to themselves, to their fellows and to the children whom they teach. Thirty years ago the centre point of importance in any place of education was the teacher; now it is the child.

And is not the changing of relationship the most important change that is taking place in the world to-day? If there were nothing else to say, the importance of the place of psychology in the training college is surely demonstrated.

RÉSUMÉ.

LE RÔLE DE LA PSYCHOLOGIE DANS LA PRÉPARATION DES PROFESSEURS.

La contribution de l'auteur à cette discussion se borne à des observations basées sur sa propre expérience pendant une trentaine d'années dans des écoles normales pour étudiantes suivant le cours ordinaire de deux ans de préparation à l'enseignement primaire.

Une enquête faite parmi des étudiantes, actuelles et anciennes, dans laquelle on leur demanda de dire qu'elle avait été, pour elles, la valeur de leur cours de psychologie, donna des résultats intéressants. Les étudiantes étaient jeunes, et leurs conclusions étaient forcément loin d'être mûres mais beaucoup des étudiantes plus douées démontrèrent que le cours leur avait été utile de trois façons ; en menant à un certain degré de connaissance de soi-même, en rendant plus facile l'adaptation au milieu social, et en élargissant leurs idées sur les problèmes de l'enseignement, surtout, sous ce rapport, en les aidant à voir les enfants comme des individus. Le niveau d'utilité de cours variait de beaucoup selon le type et les capacités de l'étudiante.

Mais il faut mentionner les limitations et les difficultés. Les étudiantes sont bien loin de la maturité et extrêmement inexpérimentées. Les conditions dans lesquelles elles seront forcées de travailler lorsqu'elles seront entrées dans l'enseignement sont, dans bien des cas, telles que l'application de principes psychologiques valables sera très difficile.

ZUSAMMENFASSUNG.

DIE STELLUNG DER PSYCHOLOGIE IN DER LEHRERAUSBILDUNG

Der Beitrag der Verfasserin zu dieser Diskussion beschränkt sich auf eigene Erfahrung von über dreissig Jahren in Anstalten für Lehrerausbildung für weibliche Studierende, die sich dem üblichen zweijährigen Kursus in Vorbereitung auf Unterricht in der Volksschule widmen.

Eine Nachfrage bei Studentinnen, die noch im Institut sind und denjenigen, die das Institut schon verlassen haben, in der sie gebeten wurden, zu sagen, inwiefern der Kursus in Psychologie für sie wertvoll gewesen, ergab interessante Resultate. Die Studentinnen waren noch jung und ihre Urteilskraft war notwendigerweise unreif, aber viele von den begabteren Studentinnen zeigten, dass der Kursus dreifachen Wert gehabt hatte, er führte zu einem gewissen Grad von Selbstkenntnis, er half den Studentinnen sich sozialen Zuständen anzupassen, und er erweiterte das Gesichtsfeld, wo Lehrprobleme in Frage kamen, besonders in letzterem Zusammenhang, indem er half, Kinder als Individuen anzusehen. Der aus dem Kursus gezogene Nutzen wechselte sehr mit dem Typus und dem Können der Studentinnen.

Aber man muss auf die Schwächen und Schwierigkeiten aufmerksam machen. Die Studentinnen sind besonders unreif und unerfahren. Die Zustände, in denen die Studentinnen werden arbeiten müssen, wenn sie eine Lehrerlaufbahn antreten, sind vielfach so, dass die Anwendung fester psychologischer Grundsätze äusserst schwer sein wird.

THE DEVELOPMENT OF SOCIAL AND POLITICAL SENTIMENTS IN WOMEN.

By MARGARET PHILLIPS.

I.—Introduction.
II.—Factors distinguishable in social and political sentiments.
(1) *Extension of the self-sentiment.*
(*a*) *Through identification.*
(*b*) *Through service.*
(2) *Extension of sentiments for individuals.*
(*a*) *For members of the family.*
(*b*) *For others.*
(3) *Extension of sentiments for small societies.*
(4) *Intellectual and æsthetic interest.*
(5) *Altruistic impulses.*
III.—Part played by formal education in the production of such sentiments.
IV.—Summary of conclusions.

Appendices.
I.—Analyses of twenty sentiments into above factors.
II.—Eight sample documents.

I.—Introduction.

It is difficult to read much psychological literature at the present time without becoming aware of the extent to which the psychology of cognition has outstripped that of will, emotion, and sentiment-formation. Nevertheless one often doubts how far practical teachers, or those who advise them, realise this state of affairs. Do those, for example, who advocate that the "love of God" or "of the Fatherland" shall be "implanted by teachers in the hearts of children," or those who struggle so devotedly to these ends, recognise that however truly their efforts may be illuminated by practical experience, they are working in relative darkness as far as any guidance from theory is concerned?

To take one illustration of the point. A recently-published pamphlet, *Education for Citizenship*, by Eva Hubback and E. D. Simon, is concerned, among other things, with "the qualities which the good citizen of a democracy must possess," and which it is asserted to be "the business of schools and universities" to cultivate. These qualities are variously stated at different points in the pamphlet; but if the relevant passages are collated they appear as follows:

(1) A sense of social responsibility: to the town, the country; above all to mankind (p. 14); an imaginative sympathy with other social classes and with other nations (p. 13); the will to work for men (p. 13).

(2) Devotion to the ideals of democracy: freedom, truth, and justice (p. 11).
(3) The power of clear thinking in everyday affairs (p. 12).
(4) A knowledge of the broad political and economic facts of the modern world (p. 12).

The bulk of the pamphlet is devoted to the means by which these qualities are to be developed. (1) and (2) above are matters of the emotions, the will, and sentiment-formation; (3) is contingent upon the freeing of intellectual processes from emotional factors; (4) is mainly a matter of cognition. The pamphlet gives one and a half pages to (1); two and a half pages to (3); and the remaining ten pages to (4), while (2) is dealt with only indirectly and by implication.

This inequality of treatment reflects fairly accurately the state of our relevant psychological knowledge. It seems, therefore, worth while to attempt to redress the balance in this particular instance, by asking how, in cases where the qualities listed under the first and second headings are known to exist, they have in fact been developed. In the course of an enquiry into the Development and Education of Sentiments, of which I hope to give a fuller account shortly in book form, I encountered material which seemed to throw some light on this matter. I secured from friends and pupils (mainly students or ex-students in University Training Departments, Training Colleges, and Adult Education Classes), accounts of the growth of any strong interest or sentiment which they cared to select; the accounts being guided to an extent which was left to the contributor's discretion by the following questionnaire:

Has the same interest or sentiment been present in other generations of your family?

Try to trace the earliest beginnings of the interest in childhood.

Give the main stages of the development of the interest up to the present, considering such matters as:

The environment in which you grew up;
Parents, brothers, and sisters;
Other relatives;
Playmates and friends;
Other adults, including teachers;
The various schools you attended, taken separately;
College education, if any;
Any other social bodies, e.g., church, clubs, etc.
Other factors, e.g., reading, travel;
Any emotions and activities which have been roused in connection with the interest;
Any further interests which have grown out of it; or
Other interests which have contributed to its development.

Please give your age as nearly as possible at each point.

Evidence was in all cases taken in writing, partly because it seemed desirable to present some of the evidence in the contributors' own words; partly on account of the close and repeated study which the material demanded. It follows that contributors have been in part selected, or rather have selected themselves, on a basis of facility in writing, which fact may of course have influenced the type of evidence taken.

Contributors were subjected to cross-questioning on their first drafts at any points where the information given seemed incomplete or where a particular line of enquiry looked promising. The supplementary information so obtained was afterwards fitted into its appropriate place in the original draft.

The method employed is obviously open to criticism, and though I believe it to be defensible, at any rate in the absence of a better, consideration of its merits and demerits would occupy too much space to be undertaken here. I therefore propose to beg this question, and to consider for what it is worth the bearing of the material so obtained upon the present problem. I have chosen from among the documents contributed by women the twenty which are at once the most closely reasoned and concerned with sentiments most obviously related to headings (1) and (2) above. Similar documents by men are a small handful which it seems safest to ignore here, though as far as they go no obvious sex differences reveal themselves.

The qualities with which we are concerned are, as the pamphlet's classification suggests, of two kinds: (*a*) sentiments for human societies; (*b*) sentiments for certain abstract qualities or ideals. In dealing with my material, however, I am not able to maintain this distinction clearly. As will be seen from the sample documents given and from the chart in Appendix I (especially Column VII), the two groups of sentiments emerge from the same type of human experience, and are rather the earlier and later products of a continuous process than different in kind. Even where they appear to achieve independent existences, they constantly nourish, reinforce, and intereact with each other.

My twenty documents fall naturally into three groups:

(*a*) A group of seven documents, all but one by students of a residential People's College; all the writers but one are over twenty-five years of age and drawn from a variety of occupations. In their case education until fourteen was followed by a period of wage-earning combined with attendance at Workers' Educational Association or other extra-mural classes, in preparation for the residential College year.

(*b*) A group of six documents by students training for teaching. Four training colleges are represented, and the contributors are in all cases under twenty-five years of age.

(*c*) A group by six friends; all graduates, all but one over thirty-five; all but one engaged in university or training college or adult education work.

II.—FACTORS DISTINGUISHABLE IN SOCIAL AND POLITICAL SENTIMENTS.

The main elements which I have been able to distinguish as constituent factors of the sentiments as a whole are set out schematically for each document on the accompanying chart (Appendix I). The exhaustive analysis of such documents is probably impossible—even on the unlikely assumption that the documents tell the whole of the story—and in any case has not been achieved here. I therefore offer in the Appendix eight sample documents in abbreviated form. These are chosen from among the twenty to exhibit the largest variety of motives in the space available. The cutting has been done with a view to space-saving only, i.e., I have tried to delete words without in any way simplifying the structure of the sentiment described.

Now to consider separately the main factors analysed.

(1) *Extension of the Self-Sentiment.*

(*a*) Through Identification.

The first factor is one which my wider investigation shows to be important in connection with sentiments of all types, and not in political and social sentiments alone. Certain types of social interest arise as a natural result of consciousness of oneself and of one's own needs. Such needs as are easily or quickly satisfied seem either barely to enter consciousness or to pass quickly from it. But needs which remain unsatisfied are present to consciousness in proportion to their urgency. They constitute in fact one of the earliest stimuli to awareness of self. At the same time they provide an impetus to interest in others, since a self which is thus aware of its own needs seems to be correspondingly more aware of others in like case than of its fellows in general. Hence it tends to identify itself with the former and to form for them a sentiment which is in origin an extension of the sentiment for the self.

Column 1A in the chart, and Documents Nos. 3, 5, 7, and 17 in Appendix II reveal the operation of this factor. It appears to underlie much of the political and social activity manifest in the world and much of the existing "will to work for men." Its danger is, however, that it is able to direct this will and activity only to certain classes of men and not to mankind as a whole. Sentiments built up in this way are in fact characterized by their limitations, a sentiment of this kind for the poor or for the workers involving *ipso facto* a degree of antagonism to the rich, or to the employing class. So in the extract quoted below from Document No. 13 a sentiment for "foreigners" based largely on a failure to find oneself accepted by English friends, involves as its obverse an antagonism to the English.

"I inclined to foreign ideas partly through my grandfather's and mother's association with foreigners, partly because I come of a roving family whose various members are dotted over the globe and *partly because of my own looks, which as a child caused me many heartburnings, as other children called me a gypsy, which made me feel 'out' of things, thus drawing me closer again to the foreign element and the idea of justice.*"

It is perhaps significant that in my documents this motive appears constantly among my contributors in Group A, more sporadically in Groups B and C.

(*b*) Through Service.

Secondly, there may exist, in the society of which the self is a member, a need or demand which the self can fulfil. In this case there will take place an extension of interest to the society which makes the demand. So strong in the self apparently is the "need to be needed," so intense the pleasure arising from its satisfaction, that the question may be asked: might not any society, whatever its principles, which made the necessary demand at the appropriate moment, succeed in enlisting the devotion available? Thus the writer of Document No. 6 remarks:

"I am almost certain that had it not been for personal stimulus at this juncture, together *with the feeling I was given that I was wanted in the Movement*, I should probably not have joined them, and it is quite possible that my special interest in internationalism would have been displaced by something else."

The principle may be clearly seen at work in Documents Nos. 7, 12, and 14 in Appendix II. A recurrent phrase indicating its presence is "at last I found a place where I was wanted." The phrase usually represents a landmark in the development of political and social loyalties. Thus in Document No. 7 the intensity of the writer's devotion to Communism seems largely to be explained by the fact that this demand for service, never made (or at least never recognised) in connection with her home, school, college, or professional life, is clearly formulated by the Communist Party.

Every document analysed, it will be noted, involves an entry either in Column 1A or in 1B—i.e., the self and its needs are apparently bound up in one of the two ways described with every sentiment here considered.

(2) *Extension of Sentiments for Individuals.*

We consider next a principle which seems to be equally universal in its application. Normal human development obviously involves the formation of sentiments for other individuals: first, as a rule (*a*) parents and "parent substitutes" chosen from one's own immediate family circle; later (*b*) more distant relatives; teachers; ministers of religion; older friends; members of other families, in whom the parent-substitute element is decreasingly apparent. In each case the principle is the same. When a sentiment for another person is formed, it includes

potentially the whole range of that other person's sentiments. Where these are social or political, similar sentiments may develop in the original self, as torches may be lit at someone else's flame. The working of this principle may be studied in Columns IIA and IIB. Once again, every document analysed involves an entry in one or other of these two columns. Striking examples are Documents Nos. 3, 7, 8, 11, and 17 in the Appendix, and the following extract from No. 19.

" I was brought up in a definitely political atmosphere from my earliest days. My father was the leader of the Radical Party in our village—I imagine from about the date of my birth, or soon after. Personal freedom counted immensely with him. He hated the excessive influence of landlords, all forms of servility, the tied cottage, inferior education for the poor—and valued everything which made for personal independence.

" His constant political pre-occupation was with the life of the agricultural labourer ; he told us of the hard life they lived in the early nineteenth century—the food they ate, their poaching, Arch's Trade Union Movement (especially all the details of the meeting on our village green).

" He had written for the *Economic Journal* on their wages, so on this point, as on the more intricate and local ones, we had good information. At this time, from my twelfth to my fourteenth year probably, I kept my mother's household accounts, totting them up weekly. They used to come to about £3 if I remember rightly, and I used to wonder how a man earning twelve shillings per week could keep a family, and indeed knew perfectly well that it could not really be done. I was chidden one day for singing to wedding bells which were ringing for the marriage of a labourer and a girl I knew, ' Twelve shillin' a wik ! Twelve shillin' a wik ! '

" A chivalrous attitude then towards the poorest class was the air I breathed."

(3) *Extension of Sentiments for Small Societies.*

A similar principle appears to hold good in the case of sentiments for certain small societies. We shall not here devote space to examining the origin of these sentiments, itself a controversial matter, but shall assume (*a*) that such sentiments are as much a part of normal human development as are sentiments for individual persons ; (*b*) that normally the first objects of such sentiments are the family and the adolescent 'gang'; (*c*) that sentiments for both are under certain conditions capable of being extended to large societies. But these assumptions do not justify the view, so often advanced by politicians and League of Nations enthusiasts, that a sentiment for a small society is the all-sufficient root and basis of sentiments for larger societies; that for example, as is so often maintained, a sentiment for one's family or for one's school normally and naturally expands into a sentiment for the town, country, empire, or world state. On the contrary, such expansion will only take place, or so my material suggests, under certain definite conditions—i.e., when the new society either (*a*) resembles an individual in possessing an informing purpose, a scale of values, a characteristic outlook (as in

the case of a church or a political party); or (*b*) resembles the family in structure (as in the case of a residential school or college); or (*c*) resembles an adolescent 'gang' (as in the case of a club, or voluntary society). Fuller analysis of these conditions need not perhaps be undertaken here. But all such new societies will be observed to possess certain common characteristics. They are set in the context of a larger society, and are surrounded by other societies similar to themselves through intercourse with which consciousness of their own identity can develop. Hence their appeal is strong in proportion to their exclusiveness, their rivalry with other groups, the contrast between themselves and the world in which they are set.

Examples are to be found in Documents Nos. 12 and 14 in the Appendix, and in the following passage from Document No. 1.

"The same year I discovered a society in B—— called the Irish Democratic League which was made up of the queerest mixture of people imaginable. The only common feature was their nationality. Unknown to my parents I joined the Junior Branch of this organisation and spent one evening a week with them. We used to wear the Republican colours under the lapels of our coats and unless you showed them you were not to be admitted. This was all very thrilling and made me feel like a conspirator in the cause of Irish freedom. I sang with great gusto, 'Wrap the Green Flag round me, Boys,' with which we closed the evening. What we wanted, we said, was a Republic for Ireland, and we swore that we would do anything to further that end. I could not understand half they were talking about most of the time, but my spirit was good."

Given the existence of such sentiments—whether of devotion or of antagonism, they can, it seems, be expanded in ways in which sentiments for the self or for other individuals have already been seen to expand. Thus sentiments for (or against) a local church or the local branch of a political party can be extended to the church or the party as a whole; antagonism to the social life and working of a particular factory may extend to the economic and moral system which informs it. There is perhaps no need to study here the actual process of expansion; suffice it to say that the laws of association serve to explain it. The object of a sentiment is no one simple thing or idea, but a system of knowledge which grows as all knowledge grows. As the sentiment develops, feeling and action follow the developing lines of thought.

The principle is illustrated by the following extract from Document No. 4:

"When I entered a factory at thirteen I knew none of the later antipathy I experienced towards the employing class. In a factory justice is often unknown, influence is the all-important factor. My way had not been paved by an aunt or elder sister.

"In a factory, individuals are often denied the right of speech that is conceded in an English Court of Justice. One experience made me especially bitter. I was a stitcher, and stitchers often had to wait while patent-turners turned down the raw edges of the inside of the collars. This meant that we

creased them, as the patent turners turned them. To do this we had to leave our machines and stand by the turner at the turning table the other end of the room. I was creasing one evening when the steam stopped at six p.m. I removed my pinafore and placed it on a table. That night my particular patent turner forgot to put out her box (gas iron). Part of the table, her pinafore and mine was burnt. Next morning we were both suspended for a week. The forewoman told me that I should not have left my pinafore on the table. I retorted that there was no rule to that effect—it was a common practice of every girl employed in the factory.

"I soon realised that the larger part of my conscious life was spent under an economic régime. Board of Trade regulations attempted to soften and humanize that régime, but many of these were, and are (as far as my present knowledge goes) ineffective.

"I became more and more convinced that social injustices could be remedied only through the political machine."

Similarly a sentiment for a school, college, or voluntary society may be extended to its values and ideals. Documents Nos. 3 and 12 in the Appendix illustrate the general principle.

The question now arises, how are we to explain the existence of sentiments for larger, more inclusive societies, in whose case the conditions mentioned above are necessarily absent? How comes it, for example, that as nine out of the twenty documents with which I am concerned show, the internationalist ideal can be invested with force and passion?

(4) *Intellectual and Æsthetic Interest.*

There evidently exists, at any rate in many individuals, once their more pressing personal needs have been satisfied, a fund of intellectual curiosity ready to direct itself to human affairs in general. Though the universality of this impulse has long been recognised and provided for, in practice, by the press, by gossip agencies, by biography, autobiography, and fiction, psychologists and politicians still tend to explain the growth of social sentiments in terms of altruism, social feeling or gregariousness rather than in terms of simple human curiosity. Documents Nos. 11 and 14 in the Appendix illustrate clearly the working of the latter. I quote also the following excerpts from No. 13:

"The very first time when I must have learnt that there did exist another world than that immediately around me and which I knew of, was at the age of two. One evening when Mother had left Father to take care of me, he amused me by putting up on the wall a big map of the world, all the countries being differently coloured. As he pointed to the various shapes, he told me their names and I can remember him most plainly showing me Greenland, which I noticed more than the others, perhaps because it was painted in green!

"My brother, too, mystified me one day by talking about the Red Sea, the Black Sea, and the Yellow Sea, and as I only knew the kind of sea which was of a bluish-green colour, I became very curious about these new species and begged my parents to go to them for our next summer holiday.

"At the age of six I went to school. I wanted to know about foreign lands, and books I found were the best means of satisfying that curiosity.

Not only did they give me mental pictures of life in foreign lands, but they also supplied me with stories of adventure and romance. I associated such adventures with foreign lands and my longing to go abroad grew more and more.

"A little later my interest in foreigners was heightened, for two of the teachers at school went to Australia for a year while we had two Australian teachers in exchange.

"After this I went to a High School, where the learning of French was to prove the key to a new world—that of French literature and French ideas."

The presence of intellectual curiosity as a motive in the documents is noted in Column IV in the chart. In the same column I have indicated the presence of the æsthetic appeal—slighter, as far as this particular material goes, except in the case of Documents Nos. 11 and 17; stronger probably wherever the sentiment has a territorial basis, as in the case of Ireland (No. 1) or of sentiments for a home town or home village not included here. Document No. 17 is an interesting example of a sentiment for an abstract quality largely based upon æsthetic admiration (of the individuals embodying it; of its presentation in literature; of its working in practical life). The negative operation of this principle—as for example in the horror roused by injustice or by a visit to the war-devastated areas—is present in several documents.

(5) *Altruistic Impulses.*

Altruistic impulses are normally called out by individuals younger, smaller, weaker or less fortunate than oneself. As Column V in the chart shows, their operation in these documents is sporadic and uncertain. Altruism is doubtfully present in Documents Nos. 3 and 17; more certainly in Nos. 8 and 11. One of the surface-disillusionments of the present enquiry consists in the extent to which sentiments presumably disinterested turn out on examination to be based on "selfish" principles. Thus the writer of No. 17 herself remarks on the connection between her indignation over injustices done to others and her own personal and temperamental needs; a similar principle seems to be operative in Document No. 3.

III.—Part played by formal education in the production of political and social sentiments.

Assuming that these are the main factors concerned in forming the sentiments under discussion, in what ways can schools and colleges contribute to the development of such sentiments? The following inferences may I think fairly be drawn from the material.

(*a*) Schools and colleges can do something to prevent the formation of limited and exclusive sentiments, such as those described in Documents Nos. 3, 5, and 7, where devotion to one social group involves antagonism to another. By endeavouring to meet their pupils' most urgent psychological needs, they can

discourage the formation of groups whose common bond is a grievance.

(*b*) They can by the demands they make upon their pupils give them the satisfying consciousness of being needed by the society of which they are part, and so help to stimulate social devotion of the kind illustrated in Document No. 14.

(*c*) Since teachers are among the most important of parent substitutes, their political and social sentiments may largely determine those of their pupils. See, for example, Documents Nos. 5, 8, and 12. For this reason, the personalities of school and university staffs would appear to be supremely important, though it should be noted that as far as my material goes the influence of parents in this respect seems to outweigh even that of teachers.

(*d*) Formal teaching can evidently stimulate, feed, and direct outwards to wider human affairs the fund of intellectual curiosity existing in young minds. Documents Nos. 7, 8, 11, 12, 14, and 17 all illustrate this possibility.

(*e*) Presumably also schools may similarly rouse, direct, and give wider scope to such altruistic impulses as are latent in their pupils. On this point, however, my documents give very little evidence.

IV.—SUMMARY OF CONCLUSIONS.

(*a*) The formation of comprehensive political and social sentiments is hampered by the continued existence in any individual of urgent unsatisfied needs (whether physical or psychological). Where these exist, sentiments limited in range and exclusive in nature will result.

(*b*) To feel oneself necessary to others is one of the most imperative psychological needs. Any society which satisfies this need tends to become the nucleus of a strong sentiment.

(*c*) Sentiments formed for one individual by another are normally extended to the former's interests. Many social and political sentiments have this genesis.

(*d*) Sentiments for small societies will be extended to larger ones only where certain conditions as to resemblance are fulfilled.

(*e*) Intellectual and æsthetic interest directed to human affairs enters into the composition of many social and political sentiments.

(*f*) Altruistic impulses enter similarly, though possibly less generally, into social and political sentiments. When present they constitute a powerful motive force.

(*g*) The influence of schools and of formal education generally may operate in connection with any or all of the above factors. It is doubtful however whether it can ever compete with early home influences.

APPENDIX I.—ANALYSES OF TWENTY

Number of Document.	Age of Contributor.	Education.	Occupation.	Object of Sentiment.	SENTIMENTS EXTENDED.			
					For Self.		*For Individuals.*	
					Through Identification.	*Through Service.*	*Members of Family.*	*Others.*
	GROUP A.				IA	IB	IIA	IIB
1	20+	*Workers' College.*	Typist.	*For Irish Home Rule against England and Ulster*	Self as Irish identified with Ireland against Black and Tans during Civil War, and later with aggrieved Irish generally.	Membership later in England of Junior Branch of Irish Democratic League; feels like active service. Early longing to shelter the "boys on the run."	(Not mentioned but its existence suspected.)	
2	35+	*Workers' College.*	*Married Woman.*	*Labour Party.*		Devotion to Party increased by taking over secretaryship of women's group.	Sentiment for mother (an active member of Labour Party) extended to the cause.	
3	25+	*Workers' College.*	*Domestic Worker.*	*Labour Party.*	Contrast with cleverer brother and difficulty with arithmetic induce feeling of inferiority. At school writer identifies herself with the poor, the scholastically backward, the anti-conservative.	(Writer now a keen worker for Labour Party. Secretary of a local branch.)	Sentiment for father extends to his Labour views. Sentiment for mother (member of Women's Co-operative Guild) extends to her sense of justice.	Sentiment for a prominent co-operator and Socialist reinforces original sentiment.
4	30+	*Workers' College.*	*Factory Worker.*	*Labour Party.*	Self identified at first with the poor, later with workers against employers.		Sentiments for mother (suffering through poverty) and for father (hardly treated under Unemployment Insurance Act) strengthen resentment against "the system."	Friendship with a keen Socialist and Trade Unionist strengthens original sentiment.
5	30+	*Workers' College.*	*Domestic Worker.*	*Equality.*	Early identification of self with socially inferior. Antagonism to rich employers and to idea of personal service.	Work for Labour Party in rural areas strengthens sentiment.	Mother's early struggles with poverty rouse resentment against food taxes. Father's subjection to landlord employer produces hatred of tied houses.	Sentiment for favourite teacher extends to her beliefs in equality and liberalism. Dislike of rich employers extends to the class.
6	25+	*Workers' College.*	*Telephonist.*	*Internationalism.*	Identification of self as young with Youth Movement abroad. (Longing to travel.)	Demand for personal service in connection with No More War Movement strengthens sentiment.		Enthusiasm for a prominent pacifist extends to her ideas.
7	25+	*Training College.*	*Teacher.*	*Communism.*	Identification of self at different stages with the inferior and exploited, sexually, socially, educationally, economically, politically. Hatred of all exploiting forces.	Consciousness of being needed by the Communist Party (her first experience of the kind) largely accounts for the sentiment.	Sentiment for mother (a rebel) may have included her ideas. Sentiment for father extends to his belief in equality.	Antagonism to housekeeper strengthens sentiment for equality. Sentiment for friend extends to freedom in education. Later strengthens antagonism to personal exploitation.

SENTIMENTS INTO ABOVE FACTORS.

	CONTRIBUTIONS MADE BY—			
For Small Societies.	*Intellectual and Æsthetic Impulses.*	*Altruistic Impulses.*	*Books and Formal Education.*	*Other Sentiments—Conflicting. Interacting. Emerging.*
III.	IV.	V.	VI.	VII.
Sentiment for Convent School in Ireland extends to its anti-English teaching. Dislike of English school later extends to England generally.	Beauty of Irish country and coast contrasted with ugliness of industrial Yorkshire. Interest in history of Ireland.		Reading of Irish history feeds intellectual interest.	Sentiments emerging are hatred of war; sentiment for freedom; admiration of de Valera. Religious sentiment (for Roman Catholicism) reinforces both original sentiments.
Liking for social activities of local branch of party extended to party as a whole.		Cases of poverty encountered in capacity as secretary rouse pity and anger.		
Dislike of wealthy members of local church extends to Christianity as a whole.		Impulses roused on behalf of poor and dull schoolfellows; and later on behalf of own less fortunate Sunday School pupils.		Sentiments for Communism and against Christianity emerge and reinforce original sentiment.
Dislike of factory and resentment at injustice experienced there extends to existing economic system.			Influence of Liberal and Socialist newspapers. Modifying influence of W.E.A. class in economics.	Sentiments for justice and Communism emerge. Sentiment for religion at first conflicts.
			Liberal daily paper and pamphlets. Life of S. Francis. Book by Bishop Gore.	
Interest in Promethean Society extends to its ideas. Membership of Educational Settlement has similar effect.	Appetite for experience. General interest in ideas.		Books by Shaw, Cole, Le Mesurier, Delisle, Burns rouse interest in politics.	
	Communist theory solves intellectual problems for the first time.		Lectures in college and later in biology, psychology, philosophy, economics all contribute.	Anti-Christian sentiment emerges.

APPENDIX I.—ANALYSES OF TWENTY

Number of Document.	Age of Contributor.	Education.	Occupation.	Object of Sentiment.	SENTIMENTS EXTENDED.			
					For Self.		For Individuals.	
					Through Identification.	Through Service.	Members of Family.	Others.
GROUP B.					IA	IB	IIA	IIB
8	20+	Training College.	Teacher.	Socialism.		Need to present case for Socialism in school debates develops interest in it.	Sentiment for brother and for his friends extended to their political views.	
9	20+	Training College.	Teacher.	Equality.		Part taken in mock election and debates at school strengthens sentiment for Socialism.	Sentiment for father extends to his belief in equality and progress.	
10	20+	Training College.	Teacher.	Pacifism.	Fear roused by air raid during childhood extended to war.	Work for L.N.U. at school and college develops interest.	Sentiment for Quaker parents extends to their sentiment for Pacifism.	Sentiment for foreig friends extends t their native cou tries.
11	20+	Training College.	Teacher.	Brotherhood.	Self as child identified with German children in fairy stories; later with Youth Movement abroad.		Sentiment for Irish father and grandfather extended to Ireland.	Sentiment for Ge man correspondent extends to Germany. Sentiment for father pacifist friend extended to pacifis
12	20+	Training College.	Teacher.	Labour Party.		Work as canvasser at elections increases enthusiasm.	Sentiment for parents extends to their interest in Labour Party.	
3	20+	Training College.	Teacher	Internationalism.	Identification of self as child with a roving family and (by reason of her looks) with gypsy blood.		Sentiment for travelled relatives extends to other countries. Sentiment for father extends to his interest in foreign culture.	Sentiment for Frenc correspondent e tends to foreig countries and h (internationalist views. Exchange teachers with Au tralia leads to inte est in that countr
14	20+	Training College.	—	Social Service.	Identification of self with the common people.	Opportunities for service at home, school, college, as a teacher, strengthen the sentiment.	Sentiments for teachers, schoolmates, fellow-students, extended to their ideas.	

NTIMENTS INTO ABOVE FACTORS—*continued.*

	CONTRIBUTIONS MADE BY.			
For Small Societies.	*Intellectual and Æsthetic Impulses.*	*Altruistic Impulses.*	*Books and Formal Education.*	*Other Sentiments—Conflicting. Interacting. Emerging.*
III.	IV.	V.	VI.	VII.
	Interest in political ideas aroused at school.	Personal exploration of slum areas, and experience as teacher in slum school arouses pity.	School history teaching; Russian propagandist literature; college lectures in social science all feed interest.	Sentiment for father and for friend (both Conservatives) conflict. Sentiment for Communism nascent.
				Intellectual interest in antiquity; æsthetic appeal of classical buildings and of religious ritual give rise to conflicting sentiment for tradition.
entiment for Quaker chool extends to its teaching.	Horror roused by visit to devastated areas in France.		"Testament of Youth!" "Cry Havoc."	Sentiment for travel and for developing international point of view in others (emergent).
	Intellectual and æsthetic interest in the language, literature, music, dances, scenery, customs, peasant arts, of other countries.		School teaching in geography, history, literature, language influential throughout. Travel books.	Sentiments for travel and sport (interacting).
ntiment for social le of local Labour group.			School history teaching and books by Socialist writers develop interest.	
	Childish interest in the globe; map of the world; the names of countries and seas; foreign words.		Interest fed by school history, geography, and literature; travel and adventure stories; films; Scott's novels.	Sentiment for antiquity a moderating influence. Sentiment for education as a means to an end (emergent).
ntiment for numous social groups school and at college extend to mankind as a whole.	Interest in people and in social problems generally.	Altruistic impulses continually aroused by various types of unfortunates.	School and college teaching discussions and reading feed interest constantly.	Minor contributory sentiments for free trade; Socialism, pacifism, education.

Occupation.	*Object of Sentiment.*	SENTIMENTS EXTENDED.			
		For Self.		*For Individuals.*	
		Through Identification.	*Through Service.*	*Members of Family.*	*Others.*
C.		I*A*	I*B*	II*A*	II*B*
Teacher.	*Internationalism.*		Activities connected with various internationalist bodies strengthens sentiment.	Sentiment for sister extended to her interest in France.	Sentiment for for friends extended their native c tries.
Lecturer.	*Internationalism.*	Childish fear of wartime air raids extended to war in general.		Sentiment for father extended to his internationalist sympathies.	Feeling for a Qu friend extended pacifism. Sentim for missionary fr in China extende Far Eastern questions.
Lecturer.	*Justice.*	Self identified with common people to whom justice is a necessity.		Sentiments for parents and grandmother extends to their feeling for justice. Horror at injustice suffered by them extends to injustice in general.	Sentiment individual fri extend to a qu of justice in t
Lecturer.	*Hatred of Poverty.*	Identification of self with working classes.		Sentiment for father and mother extends to their fear of material poverty. Sentiment for grandmother extends to her acceptance of poverty (a conflicting sentiment).	Sentiment individual ter acquired when collecting as a extends to the they represe
Lecturer.	*Equality.*		Work as a child distributing leaflets contributes to sentiment.	Sentiment for father extends to his sentiment for equality; sentiment for brothers extends to their political activities.	Childish disgus behaviour of extends to social theori
Lecturer.	*Foreign Affairs.*	Extension of idea of self to include taking an interest in foreign affairs.		Sentiment for father extends to his general interest in politics.	Sentiment relatives who grate extende new countries. timent for a te extends to he interest in Col histor

SENTIMENTS INTO ABOVE FACTORS—*continued.*

	CONTRIBUTIONS MADE BY—			
For Small Societies.	*Intellectual and Æsthetic Impulses.*	*Altruistic Impulses.*	*Books and Formal Education.*	*Other Sentiments—Conflicting, Interacting, Emerging.*
III.	IV.	V.	VI.	VII.
Sentiment for cosmopolitan students' hostel extends to its informing principle.	Interest in other peoples, ideas, languages, religions, countries.		Stimulated by college studies at home and abroad.	Reinforced by religious sentiment.
	Interest in other countries, speech, customs, dress, physical features, races, history. Impulse to foreign travel.		Interest stimulated by college course in geography.	Subsidiary sentiments for religion and foreign missions. Conflicting sentiment for naval port (native town) and naval friends.
	Intellectual and æsthetic admiration of mental and moral qualities underlying justice.	Anger roused by cases of injustice met with.	Reading of Plato and Bacon. Study of logic.	Interest in legal principles and procedure.
	Interest in economic and sociological problems.		College stimulates interest in economic and social questions.	Admiration of spiritual poverty conflicts.
		Concern for less fortunate classes.		Anti-clerical sentiment subsidiary.
			Stimulated by newspapers; the war and journey abroad; reading of history; contemporary political problems and economic anxieties.	

Appendix II.—Eight sample documents.

Number Three.

"My father has been a man of definite Labour views ever since I can remember. He has strong prejudices and is somewhat hasty in judgment. Yet he has a good deal of sound common-sense. He is always on the side of law and order. My mother has, I think, a keen sense of justice. Though perhaps I am more fond of mother than of my father it is the latter, I think, who has influenced me most directly. Mother was a member of the Women's Co-operative Guild, and we often went to meetings with her.

"At the age of nine I was in Standard IV in the elementary school. During a history lesson one day the head master, whom I disliked and feared, came into the room. After observing teacher and scholars for a few moments, he took over the lesson himself. It was on the Corn Laws. He gave us an interesting account of the Corn Laws and pointed out how iniquitous they were to the poor people.

"I well recall how surprised I was at hearing him put this point of view forward, and I thought to myself, 'Oh, he isn't so bad after all; he does feel sorry for the poor people.' Even at that early age I had a dim idea of what Conservative and Labour meant. I had always thought of the head master as a Conservative because he always seemed to be caning the very poor boys in the school and the well-dressed children always seemed to be favoured by him. He caned boys for dirty hands and dirty shoes. That always made me very cross and I thought it was unfair.

"I judged all my school teachers by their attitude to the poorer scholars. It always seemed to be the case that the poorer scholars were in trouble much more often than the others.

"When I told my father about the history lesson, my father's reply was, 'Mr. —— is a Liberal and believes in Free Trade.' I remember I was very puzzled to know what Free Trade meant. Anyhow it seemed to be a good thing.

"The next incident also took place at school when I was about eleven years old. May Day was the great event of the year. A May Queen was elected and crowned on May Day.

"On this occasion Lady B—— performed the ceremony. The following day the school teacher praised Lady B——'s taste in dress, especially mentioning her hat, which she described as canary-coloured. Though interested in the gossip, I nevertheless had a feeling of revulsion. I felt that the teacher respected and admired Lady B—— merely because of her title.

"At this point I turned to my neighbour and repeated a remark of my father's about Sir S. B——, who was a Conservative M.P.; namely, that he was a rotter. The girl waited her opportunity to catch the teacher's eye, and jumped up and said, 'Please, Miss B——, D—— says Sir S. B—— is a rotter!' The teacher looked horrified and put me in the corner for the remainder of the morning. I never forgave the girl all the time I was at school.

"I had the teacher I have just mentioned for three years. I hated arithmetic; because she made me persevere I hated it more than ever.

There were times when she became most exasperated because, though I nearly always used the right method for a sum, I usually made a slight mistake in the figures.

" I feel that indirectly this has some bearing on my opinions. I felt sympathy with all children who like me could not do arithmetic, and as these were generally the poor children, I came to feel for the poor children and against the rich.

" At the age of twelve I joined a Church of England Sunday School. At thirteen I was teaching in the Primary Department of the Sunday School and that same year I was confirmed. It was a wealthy church in a working-class district. There were hundreds of very poor people in the parish, the poorest within a stone's throw of the church. Several of the pillars of the church were known to pay their workpeople very poor wages.

" During a Sunday School teachers' meeting to discuss the Christmas treat I decided I could stand it no longer. The meeting decided that they couldn't afford to give the children a treat. Eventually they agreed to do so and charge the children threepence each. This example of meanness came somewhat as a shock. I knew perfectly well that many of the people there were quite wealthy and even if the church was as poor as they said, they could easily have provided the money without even missing it. The result was that some of us refused to charge the children and paid the money out of our own pockets. At this time I had only sixpence per week pocket money, and as I had six children in my class, naturally I did not find it very easy to provide the money. I had no feeling of virtue about it at all. The only feelings I had were anger that the other people, the wealthier members of the church, did not do the same. After that I decided that I had finished with the Church of England.

" Shortly after this I left S—— and took a post with Mrs. P——, who was a prominent member of the Co-operative Movement and a loyal worker for the cause. This woman had a tremendous influence on me because she was a Socialist and knew the old Socialist leaders and had worked with them in the early days of the movement when she was a girl in her teens. She talked often of Keir Hardie, Ramsay MacDonald, Philip Snowden, and Tom Mann.

" Four years have elapsed since that time and my ideas have gradually turned more and more to the left, till now I do not discuss politics with my father. We seem to be as much apart as a Conservative and a Socialist. Yet we are both members of the Labour Party, but, while the name of Communism is an anathema to my father, I am beginning to think it is the only thing that will save the world from chaos, that will make the worker into a real worth-while being, and the only thing which will deliver my two brothers from fighting in another war."

NUMBER FIVE.

" I think that the first discussion I heard about politics was when I was about six. My father was a Conservative and my eldest brother, who was about fifteen, wore Liberal favours. The farmer they worked for was a Conservative and used to give strong hints to his men that they were to vote Conservative too. I don't know whether it was in a spirit of daring that

my brother put up the Liberal favours, but I distinctly remember my brother arguing that a Conservative Government would mean dearer food, and wearing in the lapels of his coat a badge with the slogan, 'Tax luxuries, not food.' And I remember that as I trudged the two miles to school I hoped that the Liberals would get in. I didn't want dearer food. I hated Fridays—pay-day. My mother was always so worried. No wonder. My father's wages were 14s. a week, my second brother earned 2s. 6d. per week. I don't know what my eldest brother earned, and besides these three wage-earners there were five others to feed and clothe.

"I know what a job my mother had each Friday. She used to start figuring out the money in the morning. So much for the butcher, so much for the baker, so much for the grocer, and could she manage to squeeze out a pair of stockings or boots for one or other of us. She *did* sew. New things were rare but we were always tidy. After my birth my mother never had any new clothes for herself until one of her daughters bought them for her.

"When I was about ten my eldest brother began taking in a daily paper, *The Morning Leader*. I read it regularly. I was interested in some Liberal pamphlets I found at home one day which stated how Lloyd George was going to bring prosperity to the countryside. I remember that a farm labourer was to be paid a pound a week and *rent* his cottage. The tied cottage was to be abolished. My father decided that when the election came he would vote Liberal. That tied cottage had cast a shadow over my childhood. I had seen people in the hamlet turned out in the road. My father put up with a lot of abuse to save us from the same fate.

"Every Michaelmas and every Lady Day people came and went from the hamlet. The farmer had a hasty, violent temper, and he would use the foulest language to men and boys. He always wanted a man with sons to work, and when the sons wanted to leave home the father would have to leave his job. The boys used to do a man's work (without receiving a man's wage). Our cottage was about five hundred yards away from the farm so that if the farmer wanted my father to 'put the cob in' or as it became later, 'get the car ready,' he could stand at the door of the stable-yard and whistle for my father. We have stood in our garden and heard him abuse my father.

"Quite often my father would come home and tell us about it. My mother would then say, 'We won't put up with it, but we can't leave till we have got the potatoes up,' or 'We can't leave now the garden is planted, but we will go at Michaelmas (or Lady Day).' But when Michaelmas or Lady Day came or a few weeks before those dates, there would be no outbursts of temper and my mother would say, 'Let us stick to it for one more year; there is always something to put up with wherever you go and it costs money to move; we can't afford it this time. And the cottage is good; some farmers' cottages are awful, and moving knocks the furniture about so.'

"We lived two miles from the village church and school. I did not like the infant teacher. She distinctly favoured the children who were well dressed and pretty, and the consciousness of being neither made me painfully shy. At school we were made to curtsey to the teachers, vicar, and gentry. When I was nine the head master was replaced by a mistress,

and I began to like going to school. She stopped us from curtseying in school, saying that we were equal and she hated it. I owe much to her influence. I remember her telling me that there would shortly be scholarships to secondary schools available and it was a pity I should miss the chance of competing for one. I remember during an election, when one girl next to me was wearing the Liberal favours, her whispering, 'That is the right colour!' This strengthened my belief in the *Morning Leader* and that my eldest brother was right and my father wrong!

"I did *feel* glad when my school mistress said we were 'equals.' Until then I had looked upon teachers as 'above us.' After that I curtsied to no one.

"I left school at twelve.

"I wanted to earn money so as to be able to help my mother, but I was never attracted by the pictures she painted of 'gentleman's service.' I had no desire to look neat and smart in cap and apron, or to open the door to lords and ladies, and help them to dress. Long before I was twelve I wanted to be a school teacher. I told my mother and she said, 'it was no good' (and in the circumstances it wasn't), 'I should have to go into service like the others.'

"During the war I went into domestic service. The people were very wealthy, the man being the son of a millionaire. The war, I learned, increased their wealth, for they had shares in a munition factory. At this house we had no shortage of food—except sugar. Ration cards were in being, but the butcher would let Mrs.—— have what meat she wanted. We had abundance of butter which was made at the house. When I went home where things were so different it made me indignant. I grumbled about the state of affairs and about having to wait upon a man who was young and healthy and stronger than myself. My mother used to reprove me and say that I ought to be thankful for having such a good place; that it was my 'place' to wait upon such people. I determined to go and work with some Sisters of Mercy. I got in touch with some sisters who had a home for chronic invalids. 'There,' I said, 'I should be performing tasks for people who could not perform them themselves.' My parents forbade me to go, but I would not let the matter rest. Amongst the lives of the Saints that I read that of S. Francis of Assisi made a great impression upon me, and I began to loathe serving wealthy people who were living useless lives.

"I got to know the Rector of M——, who lived seven miles away and he lent me books, amongst them was one by Bishop Gore which converted me to Socialism. I became an individual member of the Labour Party, took in the *Daily Herald, New Leader*, joined the Co-operative Society, and spoke about the Labour Party, what it stood for, and what it was endeavouring to do, to all who would listen.

"I cannot remember the title of Bishop Gore's book, but I know it was based on the 'Sermon on the Mount,' and in it he said how he had been brought up to believe that the working classes were ordained to do the unpleasant work of the other class, and how he had come to see how contrary this was to the idea of the Fatherhood of God and the Brotherhood of man.

" I determined to live and work for all to have their share in the good things of life, so I joined the Labour Party and politics became my chief interest.

" But I'm sure the Rector of M—— never guessed that the book was going to have such an effect on me ! "

NUMBER SEVEN.

" Why should I be a Communist when hundreds of other people in a similar economic position to me don't worry about it, and find that life offers them much to enjoy and to do even under capitalism ? A certain amount of creative leisure is open to them, art, literature, various forms of handwork, drama, etc., and with it all the opportunity for friendships.

" I have memories of ' lectures ' from my father on the theme of ' all men are equal,' and knew vaguely that my mother went out doing political propaganda and believed in women's freedom. In my early youth (up to ten years) my brothers always took equal shares in home duties. My mother was unhappy and a rebel against her position of economic dependence. She married because she hadn't a living wage, and there was little opening for women apart from marriage (she had to leave school early). But she wanted a career as well as marriage. Marriage was irksome and she was no housekeeper. I always felt a little ashamed of her—probably reflected my father's attitude. I was very fond of my father, and apparently did not get on too well with my mother. When I was seven years my mother was taken away to a mental hospital. It was all rather mysterious and the neighbours were curiously kind to us all. I didn't like them to be.

" There were six children and we didn't worry much. Housekeepers came and went ; we all worked and played together. One of my brothers was going to be a missionary, he said, but I wanted to be an explorer.

" Then came a housekeeper who stayed. Hitherto, housekeepers had never demanded much from us. But this one did. She had a mania for cleanliness and organization. She also had a Victorian respect for men and boys. So my brothers were suddenly treated like lords, and one of my sisters and I became general housemaids. Only the boys were allowed the privilege of mud on their shoes, and long walks and bike rides.

" The housekeeper had never known love of any sort all her life. My father was the first man ever to treat her at all decently. She hated me because my father liked me. She hated my mother because she was his wife. She lavished affection on my youngest sister.

" Bit by bit my sister and I found all our own time taken from us and filled up with household duties. And it was no good resisting or trying to read a book instead of making beds. We were soon taught not to answer back, etc., and to accept bullying without a murmur, though always there remained the ' look of rebellion or impudence.' When I'd learned to control my tongue, my eye was the eye of a mad woman, I was told.

" We grew to envy our brothers. I decided I wanted to be a boy—and frequently dreamed I was one. That and discovering the North Pole were my two day-dreams.

" We had no friends and no leisure. At school I was regarded as being without spirit and with no social feelings, because I did not stay to school

games, etc. And I envied the girls who could do these things. I was tremendously impressed with the amount of reading and the good time these other girls had, and there was something attractive about them all, which I did not fathom for years. It was their economic superiority which gave them confidence and charm. On the other hand I did not like the minority set in the class. They were rude and openly disliked the others. So I belonged to neither set, and had no friends. But most of my energy was taken up at home, and I resented more and more the injustice of it all, which set my brothers and my two young sisters free, whilst one sister and myself did all the work and had to accept all the beastly bullying. At about twelve years I took to church and found consolation in feeling a martyr, and since I was lonely I also took to praying. But when this was discovered it was considered another symptom of insanity. The thought terrified me, but served only to make me more and more secretive in my thoughts and actions.

" I became friendly with a girl at school who lived near by. She was an outcast in one way, at school; very poor and yet she gained the esteem of all because of her brains. I never understood her, but I used to talk to her about my resentment against home, and my envy and hatred of the popular girls at school. By this time I was in the sixth form and was drifting into teaching. I believe I wanted to teach, but more than that I wanted to go to the University and do research work, and vaguely I thought there might be the North Pole or Greenland or something to explore. My friend was intensely religious and very unhappy at home (the only educated member of a large poverty-stricken family). I was afraid of her friendship because she was not like other girls and I feared that here was another indication that I was mad. But she was insistent on our friendship, and gradually I grew to believe that she had a special mission in life and that it was my job to go with her and look after her whilst she performed her mission. She had an impelling personality and was hailed as an exceptional teacher at college. I became dominated by her. I feared her, and yet could not resist. I felt that somehow it was my job to help her. She began to talk of our running a school together—a wonderful free school. Always it was my job to do the organising and the routine work, whilst she did the inspirational side of the job. I wasn't thrilled at the prospect, but I accepted it as inevitable, and hoped that perhaps we'd finally take a school somewhere in the outbacks and do pioneer work. I still had the desire to be a man—and sometimes had the illusion that I was one.

" At college I was at least away from home, but I was too repressed and did not know how to express myself. I made no real friends because all the time I felt I must be loyal to this friend of mine who was at another college. But now for the first time I began to feel an intellectual superiority to other folk, and got some satisfaction in ' posing as an intellectual.' But there was the fear that there was something very much wrong with me if I couldn't mix with other girls, and couldn't be gay and light-hearted. I was very lonely and easily upset by remarks about my being a funny, queer girl.

" But I enjoyed psychology and biology. Psychology helped me to explain the behaviour of all sorts of people—all my folk at home. It also made me too interested in my own psychology. I was very confused about

repressions and complexes and good and evil, etc. Felt children should be allowed to govern themselves. Had a general confusion of ideas from G.B.S. and A. S. Neill, and bits of undigested Freud, which served to make me very guarded lest I betray any interest in man. Wondered about being sterilized. Perhaps I'd grow like a man then. I rather despised women, but I resented men's superiority.

" At college, too, I began rather blindly to resent authority.

" When I got a job and started teaching, I was still half numbed and could not express myself.

" I had very strong ideas about children governing themselves. But teaching wasn't like this. I grew afraid of the children. And all the time there was this loyalty to my friend which made me so ashamed of my behaviour. I never told her how I taught. Soon I learned to bully and rave at my class.

" I hated myself for giving in and bullying, and dreamed frequently of being pulled in opposite directions at the same time. Was lonely. Started attending lectures on philosophy. Was too tired to think when I got there, but there was a feeling of kinship with other people there who were talking of things I believed in.

" I wanted desperately to take the boys out into clean fields and amongst flowers. Went to social work, but couldn't stand the social workers I met there—probably because they didn't fuss over me. Decided that they were only playing with poverty. Felt more satisfied with a few lectures on socialism I heard.

" Got job in London in school of individual work. Soon disillusioned. It was less free than my last school. Was working with my friend and living with her and another girl. School was difficult and I did heaps of evening work for it, trying hard to believe that this school was worth while.

" But school faded into the background because of relations at home with my friend. Her mother had just died, and I gave all my sympathy and duly fulfilled the job I had set myself. The friendship grew into what was I suppose a homo-sexual one. I found it a heavy strain, and finally threw it up in disgust. There seemed to be nothing now worth working for. School was hopeless, and now this also. Christianity and sympathy had simply led me up the garden. I should be fighting for my own individuality, and learning to be selfish. But I had been tampering with new ideas of all kinds. By chance met a woman Communist and was attracted—went to meetings and found I was wanted there. Accepted jobs and gradually got involved in political work. I had been emotionally exploited, my feelings of sympathy had led me astray, and I had nothing left. I saw suddenly that everybody was busy exploiting others as efficiently as possible. The only way to live was to be strong enough to exploit others.

" The Communists I had met were at least honest and sincere. They did not pretend a Christian attitude to life, and they were too earnest to be playing with other folks' emotions. Besides their sincerity they were able to explain this business of morality, and right and wrong. They explained how Christianity was no more than a tool in the hands of the ruling class. They believed in the equality of men and women. They offered a solution to poverty and all its degradation. They showed how the problem of school

discipline was all part and parcel of the whole economic system. They showed how capitalist society was built up on exploitation and hard selfishness.

"So for a while I read some economics and listened to discussions, and then I joined them. At first I experienced a release from the problems that had been worrying me, which was exhilarating. All my work improved, above all my teaching, which I really began to enjoy. I had left my friend and gone to a fresh school.

"My problem now is to find just where I can help most in the workers' struggle. I hope it will be in educational research of some sort. Then I shall do my pioneering, have my school, and work for a progressive society."

NUMBER EIGHT.

"My interest in the aims and work of the Labour Party is of recent development. All my near relations except one are, as a matter of course, 'true blue' Conservative. Therefore until I was about sixteen I, too, had Conservative ideas. I belonged to the local Junior Conservative Club and took part in all their social and sports activities.

"These ideas were encouraged at the school to which I went between the ages of eleven and eighteen. I remember at one time taking part in a mock election, when there was an overwhelming majority for the 'Conservative Candidate.' It was considered a thing 'not done' to admit that we even acknowledged any importance of the Labour Party.

"Then a new history mistress came to the school. She was a violent Liberal, and had no hesitation about declaring her beliefs and spreading her ideas. She left within a year because of her tendency to influence by her teaching, but during that year the whole school began to take politics, Government, etc., far more seriously. We had debates and discussions on political subjects, and in the beginning she found it difficult to get speakers to express the Liberal and Labour points of view, and because I had a name for being able to talk fluently on most subjects it was usually proposed that I should argue against what I then believed to be my own views. This meant that I had to do a certain amount of reading on the other side.

"At this time my brother, with whom I always have been extremely intimate, came to College. As some relaxation from his work, he began to interest himself in social service work in the neighbourhood of College, and also in a dockers' club. He began to learn many things about the conditions of life of other people of which he had never dreamt before, and he changed suddenly from casual Conservatism to the most violent Socialism. He met two school masters whom he admired very much, who are downright Communists, and he introduced me to them. We both found them good and high-principled people. They lent us books, mostly of Russian origin, all extremely 'red,' all extremely interesting to us, and gradually I began to think that the ideas with which we had been brought up might perhaps be wrong.

"We, my brother and I, made it a habit to explore on Saturdays and Sundays the poorer districts in the neighbourhood of College, and to talk, giving actual examples from our own experience, of the injustice of the existing social order; but as soon as we began to express these views my father became disturbed. His knowledge of political matters is wide and

he is a good talker, and he would turn the conversation so that some subject upon which a Socialist and Conservative would disagree would appear, then a heated argument would result. This would cause me much distress. My father counts more to me than my brother, so my affections were divided unequally. My father's arguments were sound, but my brother's were more sound, to me, and they could both talk well.

" While these things were happening, I was placed in elementary schools in the neighbourhood as a student teacher. I spent six months in a junior mixed school in a good district, and very little happened to affect my ideas on politics during school hours, but out of school many things were happening. It was the time of the last general election. My father was canvassing at home for the Conservative candidate; my brother was working for the Labour candidates both at my home and in Greenwich. I helped him to prepare his papers and typed them for him when they were prepared. I contrasted his speeches with those of my father and invariably found myself more in sympathy with him.

" My greatest friend sided with my father. She tackled me on the subject very often. She accompanied me to a meeting at which many of the Labour speakers were uneducated, short-sighted men, and picked their words to pieces afterwards, saying that that was the type of person who had Labour views.

" On election day both my father and my brother were driving cars and each asked me to go with him—I went with both, talking to both Conservative and Labour canvassers, but I was keenly disappointed when the result was declared and the ' National ' Conservative candidate was returned.

" Soon after this I was sent to a different school in a very much poorer district, and there I myself met many children who lived in broken-down houses, had insufficient food, and very little clothing. I became very fond of some of them, and I could not understand why they, who were such very good and intelligent children, should not have equal chances in life with others. My interest in them led me to become truly Socialistic.

" The school was able to do a certain amount to help, and in the majority of cases we found that the help given was gratefully received and well used. I noticed how much they made of the little that they had, and felt sure that with greater advantages they would have been really good and useful citizens.

" My work at this school, therefore, confirmed all the ideas that had entered my head before. I became more sure that the theories of Socialism, put into practice carefully, were the only means of evening up what is obviously great unfairness in the life of the people of this country.

" During this summer my brother went with his old head master, who is a Communist, to Russia to study the effects of the U.S.S.R. on the people. He returned home thrilled with many of the things that he had seen, though not converted to Communism. Now we both think that in time Russia will be the happiest and most contented if not the greatest of countries.

" At the end of this summer I came to College. Social Science lectures have made me read more and brought to me a greater knowledge of legislation, so that now that I am twenty-one and am able to vote I know very definitely which party I shall support, and despite the different opinion of my family and friends I shall keep my interests in Socialism and do all that I can to forward the work of the Labour Party in my own district."

NUMBER ELEVEN.

" All my life I have been building up a sentiment for an ideal, to which all other sentiments are related. I am a keen Socialist, Pacifist, and Internationalist. I will call the sentiment covering all these one for ' Brotherhood.'

" The fact that Germany was so much before my eyes, as it were, led me to be interested in that country in the years following the war. In the infant school and junior school I heard and loved German fairy tales. I was fascinated with the descriptions of the forests and mountains of Germany, the gnomes, dwarfs, witches, etc. I loved the little German children who appeared in the stories of Grimm. Descriptions of the customs of the German people, especially the Christmas and Easter ones, interested me intensely. I gradually came to realise that the Germans were people very like ourselves. I felt that a people who had such a wealth of folk lore behind them could not be such cruel and wicked people as I had been led to believe.

" I think I was about six or seven when I first realised that my father's family were Irish. It was later, when I heard history and geography lessons on Ireland, that I came to be interested in Ireland. I read Irish fairy stories, stories of the little people and myths. I also read, at about the age of fourteen, part of the history of Ireland. I read with most interest events in history in which bearers of my own family name took part. My father told me what he knew about my great-grandfather, a typical Roman Catholic Irishman. I have heard stories at Christmas time of my grandfather and his brother, who also were typical Irishmen. These stories roused in me an interest in Irish people.

" Scotland has also appealed to me, I think most of all when I was about fourteen. I rather think it was because of the similarity between Scottish and Irish people. I have always liked Irish and Scottish dancing, songs, national dress, etc.

" When I was seventeen I became particularly fond of rambling, and at this time, when my sentiment for Germany had become stronger, I longed most of all to ramble in that country. I read accounts in magazines and newspapers and heard people who had been to Germany speak of the rambling movement there. I thought what a splendid opportunity it gave of meeting young German people and making friends with them.

" I satisfied this desire partly by reading books of travel and books about foreign countries. I heard descriptions of German scenery, towns, etc., from mistresses who had travelled there. I was extremely fond of German music and stories and I was fascinated by Germany's old towns, forests, and mountains. I was particularly interested in the Union of Germany with which history lessons dealt. I think the greatest influence, however, was my German correspondent, a girl living in the Black Forest. I received my first letter from her when I was just seventeen. I felt I had now direct contact with Germany. I have corresponded with her for over four years.

" Learning the language also increased this feeling. My German master loved the country and its literature and music. I think he must have influenced my appreciation of German authors and musicians and poets very much.

"I happen to live near Arrowe Park where the Boy Scouts' Jamboree was held in 1929. There I saw people of many nations living together on terms of friendship and peace. This had a great influence on the development of my sentiment for 'Brotherhood. I learned much of other countries from the Jamboree.

"After this I became a keen pacifist as well. In this I was influenced by a friend of my father who had been a conscientious objector during the war and who had suffered severely for it. When I was seventeen I heard from his wife the details of his sufferings during the war. His courage made me admire all pacifists.

"I am now interested in Hungary, especially in her peasant life and her music. I think this is due in the first place to interest in wandering, which developed into interest in wandering peoples, gypsies. My feeling for Hungary is confined at present to the peasant life. It has never been a strong sentiment but is bound up in my feeling for internationalism.

"My love of outdoor life has become strongly welded with my feelings for internationalism. At home I have opportunities for seeing international swimming and golf. I follow in the newspapers international sports, such as the Olympic Games and tennis. I believe that if people meet together walking, camping, and competing in friendly games in foreign countries half the battle against war will be won.

"Thus by the building together of weaker sentiments has this big sentiment for 'Brotherhood' grown. This ideal takes the place of religion with me."

NUMBER TWELVE.

"After fourteen I began to take a great interest in politics. I have traced this back to the revival in the district of the Independent Labour Party, which my parents joined when I was fourteen. On hearing their discussions I became interested, too, and began to notice in the newspapers articles on the subjects discussed and talk them over with my father.

"School influence entered a little here. We had arrived by now at that part of history which has direct bearing on present day affairs. We had at school a very good history mistress, who presented the facts in an unbiased manner. She did not tell us what was right or wrong. She left us to think things over. The combined influence of the history lessons, newspaper articles, and discussions helped me to gain quite a considerable knowledge of political affairs and to form my own opinion.

"I began to follow the fortunes of the Labour Party with keen interest, and when I was seventeen I joined it. I became acquainted with a group of people who were sincere and intelligent. All my friends at this time were those who held the same beliefs as I.

"These friends influenced me a great deal. I worked with them, discussed with them and rambled with them. They belonged to Socialist families who were very friendly with each other. We took part in whist drives in each other's houses, picnics, and rambles. We made up parties to visit other towns to hear speakers, and we also met people from other districts and picnicked and played together. My sentiment for the ideal of Socialism grew rapidly under these conditions. I attended meetings and

discussion, heard several well-known Socialist orators, read books and plays, particularly Bernard Shaw and H. G. Wells.

" I shall never forget the thrill of helping to fight elections. The fact that we were the weaker side only made the fight more exciting. During the campaign one feels extremely proud of one's beliefs and takes every possible opportunity to propound them to the 'unbelievers.' At our elections we always found that even comparative strangers were waiting on the doorstep of the committee rooms, anxious to devote their energies to work. Work was a pleasure because it was entirely voluntary. I must also mention the meetings held during the campaign, particularly on the 'Eve of the Poll,' at which enthusiasm is at its height. One makes many friends at an election, for no introductions are necessary among the voluntary workers."

NUMBER FOURTEEN.

" At the age of four I went to school, and my first day at school was the first day of my social awakening outside the family sphere. The teacher told me that one of her young pupils had just died. I felt vaguely sorry and began to be interested in those who hadn't died. I always remained very interested in the girl whose desk I shared during my first day at school, and a dirty little boy by whom I refused to sit. I became very interested in a little girl a year younger than I, whom I took to school and helped with her lessons. We became very good friends. During week-ends, when staying at our caravan, I adopted a lonely little girl and let her use my swing when I was at home in the week.

" In the Junior School I had a few very good friends, and the teachers took a real interest in our social doings. I was the class prefect. Unofficially I became also leader and wrote stories and plays for the girls' amusement. Once I was allowed to be 'producer' with the teacher's help.

" When I was nine years old my mother became dangerously ill and has remained delicate ever since. My sister being away from home, and our relatives not deigning to help us, I took up the role of housekeeper. This year's struggle greatly deepened my family sentiment, for I knew that I had a very real responsibility in caring for the house and my father and nursing my mother. Not long afterwards my father lost his post, and for several years we lived in very difficult circumstances. I made a solemn resolution to retrieve our 'family fortunes,' so I began to work specially hard at school to get a scholarship.

" When eleven I was in the top class, and was very proud when I played netball for my school. I was very pleased when at Wembley we were allowed to strut about in our school hats. I was thrilled when one stranger assumed that we were a secondary school party. At Wembley I experienced a new type of social service in the hostel where we stayed. For the first time I lived in one big building (for three nights) with hundreds of girls of the same age as myself. The girls were from many different towns and schools, of very diverse types. This roused my interest in other people's personalities, opinions, and lives. We were all strangers, too, and therefore assisted each other and instructed each other in the mysteries of hostel life. Older girls assisted younger ones with the difficulties of long hair.

In the exhibition itself, members who occasionally got separated from their parties were made welcome by the many others from the same hostel.

" At the secondary school six of us formed a little secret society for botanizing and hiking. I was very proud of its organization. During the dinner hour we had great fun organizing our rounders in the summer and producing little plays in the cloak-rooms in winter. We always liked practical lessons because we could help each other and discuss difficulties among ourselves.

" In the sixth and fifth forms especially, the whole form became a unit. We all became very interested in the organization of the school and in the actions and points of view of the staff. We criticized their modes of punishment and their attitude to our intercourse with the boys. Especially did we condemn the many rules we had. We held form meetings to discuss many topics, such as school dress, sports, and social activities, and at last got staff co-operation in the production of plays. Our practical botany periods became a recognized time for the discussion of many social topics, such as political events of the time, matters of sex, social conditions among the poor, the effect of mechanization on the lives of the masses, the value of our own education in enriching our lives. In our scientific meetings we discussed the social values of science. In our debating society, which we organized ourselves, we also discussed social problems. Our history lessons were only too often devoted to a discussion on the effects of inflation on the common people or the value of eugenics.

" My home circumstances caused me to be very interested in politics from quite an early age, simply because, having known poverty myself, I felt profoundly sorry for the poor, and wanted better houses, modernization, rationalization, and shorter hours of labour, so that with international re-organization and co-operation more men might be employed. I was a firm believer in free trade. Once when reading about an American wheat ring, my social sentiment was strengthened, for in America wheat, the fruits of the toil of many men, was burned; while in China thousands of human being were dying for the want of it. Such a breakdown in human power of distribution revolted all my human feelings.

" At College residence in hostel seemed to play at least as important a part in my social training as college itself. Living with fifty other people instead of with one's own family must surely enrich one's social experience. There is opportunity for helping and understanding each other, in academic and domestic spheres. I had more heart to heart talks on social topics, religious and moral codes and so forth in hostel than anywhere else, and had revealed to me difficulties of all types, which made food for much thought.

" In my first year, at least, I was keenly interested and quite an active member of the S.C.M., and this led to habitual discussion groups in rooms. In the common room and dining room, too, we sometimes discussed such topics as whether capital punishment admitted failure, the futility of war, vivisection, mass production versus crafts, whether the poor were deserving of help or not, Socialism as the ultimate political system, free love, the justice or otherwise of our usual attitude to illegitimate children, and similar topics.

"My reflections on what the aim of one's life should be has resulted in the greatest impetus to my social sentiment. The aim of the world I cannot guess. I decided that in reality the best thing one can do is to concentrate on Jeremy Bentham's ideal of the greatest happiness of the greatest number. I eventually arrived at the idea of social service as being the widest aim of my life. I then had to apply this practically, according to my own sphere in life. I thought of two ways of trying to do this. Literature, music, botany, and art have enriched my life so much that I feel that by trying to reveal to others the inexhaustible treasure stores which lie in them I shall be doing my best to further this ideal. Present economic conditions have increased this desire to help girls to find real interest in cultural hobbies and open-air life, because of my own experience of the despairing conditions of unemployment. My second way of helping others and satisfying my social sentiment is an attempt to increase the spirit of peace and goodwill. This I hope to do by encouraging children in social service at school, encouraging tolerance, and a desire for discovering the truth."

NUMBER SEVENTEEN.

"My mother and my grandmother both held justice to be a high virtue, and I think their teaching influenced me while I was still very young. The first proverb I ever remember hearing was a favourite maxim of both of them. It was 'Equal burdens break no backs.'

"I was greatly interested in hearing stories of the childhood of my parents and of my grandmother. One of the stories which greatly impressed me was told when I was not more than seven. When she was eight my mother used to milk six cows before she went to school in the morning and again in the evening, for her grandfather, and for this he gave her 2s. a week. This money she was allowed by her mother to keep and at one time she had 19s. Her father borrowed this from her by a ruse. 'If thou'll lend me thy 19s. I'll give thee a golden sovereign and that's 20s.' He probably drank the money, anyhow he never repaid it. I remember the shock with which I first heard the story. For years my grandmother can never have had a shilling to spare, but over forty years after my grandfather had incurred the debt she insisted on repaying it to mother.

"One early story stands out. After his parents' death my father lived in the house of an uncle and aunt. Almost inevitably they had to go short sometimes, but his aunt tended to serve her own children first, and sometimes nothing was left for the nephew. In telling the story my father took short rations for granted, but felt what there was should have been equally shared.

"I have tried to find out more of the origin of 'Equal burdens break no backs,' as it affects my family. Mother's recollection of it is as said by a favourite aunt of hers to her husband, when he came home from work and she had spent the day baling out a flooded cellar. My mother, a child of eight or nine, was impressed that he didn't claim the masculine prerogative of sitting, while his wife continued the baling, as her own father would have done, on the grounds that he had done a day's work, but recognised that his wife had done a day's work, too.

" One other cause which must have brought this maxim home to mother was that even among her brothers and sisters she bore an unequal share of the burden. She was the eldest; the next three married young or ran away from the tyrannous father; she was left to support the younger children and also to shoulder the burdens of the married ones.

" But both Granny's and Mother's feeling for justice went deeper than the result of suffering from injustice. I cannot trace it to anything in Granny's childhood. I think it was some inherent quality of mind.

" She did not let her own experience in her marriage prejudice her. She did not regard men as worse than women because her husband was a tyrant, or think the rich all greedy and grasping because she was poor. She saw men and women and children, rich and poor, her friends and family and neighbours, primarily as human individuals. Cruelty and injustice *did* arouse a passionate indignation in her. She startled me once by a sudden recollection of how her husband had suddenly struck her eldest son, who was sitting quietly by the fireside, for no reason. Even fifty years afterwards the memory was still alive.

" It is more difficult to trace the stages of development of a sentiment for that kind of justice which consists in making right judgments about people and events.

" I think the next most important influence after my home was Oxford, which influenced me in two ways. I read Plato on Socrates, and was drawn to Socrates' philosophy; the first book of Plato's I read was the Apology, very slowly and painfully in Greek. I liked its whole trend, and particularly Socrates' final speech to his judges, and there the judges are just. I also studied logic for the first time, and began to realise how important right belief is. I was struck also by Bacon's essay on Truth; 'and when it is found it imposeth on men's thoughts.' I began to realise also what a powerful corrective of evil passions a good intelligence can be. The best minds I met seemed to me more just than the average student's, not because their owners were better morally, but merely intellectually. On the whole I found the intelligent on the side of the angels, though I know they are free to choose sides.

" By the time I was twenty-two, then, I had had the kind of upbringing which tended to show justice in glowing colours; the most loving and most beloved people I knew were the justest; the most admired intellectually were also just. On the other side injustice appeared in a black guise, because it had affected very sharply people whom I loved. At this time, for five or six years from the time I was nineteen, I was haunted by financial injustice. I was very perplexed about the ethics of unearned increment—the problems of joint stock company finance, of the function of banks and usurers, etc., really worried me acutely.

" When I went to my first post in one respect I was surprisingly naive. I had dealt mostly with just people and intelligent people. I expected more of 'educated' people than I do now, and I received a moral shock in this first school.

" On the whole I do not think the habitual running of the school was unjust; but an incident happened which shocked me because it was clean contrary to every moral or intellectual principle of justice I believed in.

Briefly it was this. On an occasion on which seventy or eighty were present, some money was lost, and it was assumed that it had been stolen. The material facts are:

(1) There was insufficient evidence to show that it had ever been stolen. It was found later.

(2) A very thorough cross-examination of every child present gave no clue as to the culprit.

(3) The head mistress spoke to all the children present and came away from the meeting with what she called a 'moral conviction' that the culprit was a certain girl.

(4) She accused the child and submitted her to hours of cross-examination and was steadfastly met by indignant and finally contemptuous denials.

(5) The child's character was good. On the 'moral conviction' the child's parents were asked to withdraw her.

"It was one of those cases in which no direct evidence of innocence could be brought, but the basis of the accusation would not have been regarded as evidence in any court of law.

"I think I have been since then greatly interested in trials, etc. I was seriously disturbed by the Saccho Vanzetti trial and read all the evidence on each side I could get hold of. I often read law reports, especially the judges' summing-up if I've followed a case. I receive real pleasure from the arguments of counsel.

"It may be that I have a legalistic kind of mind; many of my reveries are Socratic dialogues or speeches for the prosecution or defence. I love the dialogue form in literature and closely wrought argument. I am most at home with those friends who will discuss and argue differences.

"I think 'justice' is sometimes loved by people of small courage, whose attack on life is not very strong. It is, shall I say, a sedentary sentiment. The contempt which generous, rough and tumble, good-natured people pour on 'lawyers' may have justification.

"But when I try to sum it up I think on the whole that I have been more potently drawn to justice than repelled by injustice. It happens that in my life the strongest ties I have are with people, different in origin, in age, in temperament, and in intellectual capacity and arriving at justice from different approach but essentially and fundamentally just. I put no virtue but compassion higher than justice. It is the virtue where the two sides of me find equal satisfaction. My antecedents and early upbringing have given me a very strong sentiment for the common people; they inevitably are exposed to more forms of injustice than the fortunate. Another side of me which admires the intellect and abstract thought as lifting people above the turmoil of passions also finds satisfaction in justice as an abstract ideal. I hardly ever think of justice as contrary to mercy, but almost always as the bulwark of the weak against oppression."

RÉSUMÉ.

LE DÉVELOPPEMENT DES SENTIMENTS SOCIAUX ET POLITIQUES CHEZ LES FEMMES.

L'article traite la question suivante : " Comment peut-on cultiver les qualités que doit posséder tout bon citoyen ? " Il tâche de découvrir, par une étude de matériaux autobiographiques, comment se sont développés les intérêts sociaux et politiques chez celles qui les possèdent. L'on examine le témoignage de plusieurs femmes de la classe ouvrière, de quelques aspirantes à l'enseignement, et d'un certain nombre de maîtresses d'école, exerçant déjà leur métier. L'on découvre que les intérêts, dont il est question, résultent de l'extension des sentiments pour le moi, pour d'autres, pour de petits, groupes sociaux ; ou qu'ils résultent de mouvements intellectuels, esthétiques et altruistes dirigés vers la vie sociale. L'on résume les façons variées dont l'école peut aider à cultiver les intérêts politiques et sociaux. L'on analyse vingt documents et l'on donne, sous une forme abrégée, le témoignage de huit collaboratrices.

ZUSAMMENFASSUNG.

DIE ENTWICKLUNG SOZIALER UND POLITISCHER GEFÜHLE BEI FRAUEN.

Dieser Artikel befasst sich mit der Frage : " Wie kann man die zu einer guten Staatsbürgerin gehörenden Eigenschaften ausbilden ? " Es wird versucht, aus einer Untersuchung selbstbiographischen Stoffes zu entdecken, wie bei Fällen, wo politische und soziale Interessen bekanntermeise bestehen, diese eigentlich entwickelt werden. Das Beweismaterial wird von beruflich tätigen Frauen, von angehenden Lehrerinnen und von schon angestellten Lehrerinnen genommen. Es ergibt sich daraus, dass die in Frage kommenden Interessen als Weiterbildungen von Gefühlen für das Ich, für andere Menschen, für kleinere Gemeinschaften entstanden sind ; oder als das Ergebnis geistiger, ästhetischer und uneigennütziger Triebe, die auf Gemeinschaftsleben gerichtet sind. Die verschidenen Arten, wie die Schule zur Entwicklung sozialer und politischer Interessen beitragen kann, werden zusammengefasst. Zwanzig Fragebogen werden analysiert und die Aussage von acht Versuchspersonen wird abgekürzt gegeben.

BROADCASTING IN THE SENIOR SCHOOL.

By F. J. SCHONELL

I.—*The rôle of school broadcasting—its educative value in the senior school.*
II.—*Experimental research in school broadcasting.*
III.—*Nature of the experiments—preliminary testing of pupils.*
IV.—*Note-taking during broadcasts.*
V.—*Use of pictures in broadcast lessons.*
VI.—*The value of preparation for broadcasts.*
VII.—*Broadcasting for dull pupils.*
VIII.—*Additional information from tests and from records kept during the broadcasts.*
(*a*) *Length of time for broadcasts to senior school pupils.*
(*b*) *Nature of material for broadcasts to senior schools.*
(*c*) *Preparation for the broadcast.*
(*d*) *Use of pamphlets, atlases, pictures, maps, and other material.*
(*e*) *Teacher's part during broadcast.*
IX.—*Correlations of broadcast results with other measures.*
X.—*Summary of conclusions.*

I.—The rôle of school broadcasting—its educative value in the senior school.

The object of the study, reported in the following pages, was to investigate methods of obtaining maximum value from broadcast lessons in the senior school and to discover means by which broadcast material and its presentation could be improved for pupils in senior schools. The research was not organized to decide in any way whether broadcasting should have a place in the curricula of senior schools or to decide its relative efficiency compared with class instruction. Those who have used broadcast lessons consistently and who have genuinely endeavoured to understand the technique and values of school broadcasting have almost universally agreed that it is a useful teaching device and a valuable source of information. Results from the present study and from class-room experience emphasize the fact that school broadcasting is purely an additional aid, it supplements but does not supplant the work of the teacher. Only some subjects are suited to broadcasting, while the inflexibility of the broadcasting programme to specified times of the day and week limits its general use.

Its scope is strictly limited and should not deal in any way with information that can be easily assimilated from text books. In its supplementary capacity school broadcasting seeks to vitalize certain parts of the school curriculum. It seeks to arouse in the pupils, through the fresh material it can command or the old material it can present in a new and living way, intellectual curiosity and a desire for further facts that can be satisfied by individual efforts.

An outstanding value of school broadcasting, not always recognized, is the contribution it is making to preparation for citizenship through useful employment of leisure time. It has been estimated that in every-day life people listen three times as much as they read. Probably for future citizens from the present senior school population this is a gross under-estimation, yet school methods, progressive as they are to-day, would seem to devote too little time, for senior school scholars, to the spoken word and to what might be termed the psychology of listening. It should be for these pupils an important aspect of their school work, as it enters largely into their after school occupations. For not a few of them the main requirements of their work will be careful listening in a variety of situations and from a variety of people to be followed by accurate activity.

The use of wireless in the homes of senior school pupils is wide-spread. No less than 84 per cent of the boys drawn from the experimental school had a wireless set in their homes and listened on the average 7·8 hours per week. Their chief listening interests, compared with those of a senior girls' school in the same neighbourhood, were as follows (arranged in order of preference):

Boys:	*Girls*:
Variety.	Dance Music.
Sports Commentaries.	Variety.
News.	Short Plays.
Dance Music.	Talks.
Short Plays.	News.
Talks.	Sports.
Other Music.	Other Music.

Wireless programmes include material which embraces a great variety of topics. Foremost of these in their appeal are the musical and variety items but interesting and recreational as such subjects are they lead to considerable passivity on the part of the listeners. There are other sources, which would stimulate the individual to additional reading and to constructive activity. These sources are the short plays, particularly historical and biographical, and the talks on intellectual topics and on

hobbies and home activities. These provide not only emotional satisfaction but intellectual incentive as well. It is probable that a wise selection of such broadcast talks with the appropriate "follow-up" activities would provide for senior school pupils a much sounder preparation for life than some of the arithmetic and grammar at present taught. In some respects the senior school curriculum still suffers from a too academic outlook and from faulty faculty psychology. The attitude of discovering what the child does out of school and what knowledge will function for him in later life and using this as a curriculum forming basis, is still an isolated one.

Not the least useful value of the broadcast lesson is the contact which it brings to pupils and teachers with specialists in the various fields. Some would maintain that such specialists are not teachers, but up to a point there is no need for them to be teachers in the narrow sense of the term. Their object is to present supplementary material in a new and realistic way. "Broadcasting is an art and the broadcaster must be an actor."[1] Their specialized material, that at times cannot be obtained elsewhere, is made to appeal by virtue of their personality.[2] Naturally the broadcasts can be made more effective if the material is properly prepared from the point of view of suitability for particular groups of pupils. Experienced teachers and those intimately acquainted with the psychology of children could no doubt help more in this direction—thought content for pupils of varying intellectual powers, vocabulary content, sentence structure, and the concrete setting of the material should all receive increased consideration. Such improvements would enable the appropriate broadcaster to express his personality more effectively.

Many teachers admit that they have learnt a considerable amount from broadcast lessons both in information and in methods of dramatic presentation. In some instances the teacher can join in the broadcast lessons as an enquirer and a learner. The emphasis is placed upon learning rather than upon teaching; the teacher becomes a guide and a stimulator in the learning stituation.

A valuable attribute of all interesting broadcasts is the enjoyment, relaxation, and opportunity for appreciation that they provide. As with the literature lesson or the music period of ordinary classroom procedure so in the wireless treatment of these subjects there is a large

[1] *Radio and Education*, 1934, page 146. Proceedings of the Fourth Annual Assembly of the National Advisory Council on Radio in Education, 1934. Chicago.

[2] See *Speech as an Expression of Personality*, by T. H. PEAR. *British Journal of Educational Psychology*, Vol. II, Part II, June, 1932.

æsthetic element, often enhanced by the personality and intimate knowledge of the broadcaster. Such lessons should be appreciation studies: it is neither possible nor desirable to find out "how much the children have got from them." Not a few broadcast lessons are just for listening, they offer a possibility for inspiring interest in cultural pursuits and for enriching out-of-school life. The emotional satisfaction provided by good literature, music, or dramatic broadcasts is not measurable. The activities which arise from them give, in a minor way, an objective indication of their values.

With senior school pupils, some of whom are lamentably deficient in initiative and independence, broadcast lessons offer an opportunity for divorcing them from the dependent attitude which sometimes develops from continuous class teaching. Provided instructions and explanations of the broadcaster are sufficiently clear and concise the radio lesson aids in promoting self-reliance and initiative. In place of the constant conference with the teacher comes individual decision of some sort; the pupils are impelled to make a move by themselves. This aspect of the broadcast lesson was a noticeable feature of the experimental work. Instructions and injunctions before the broadcast were often followed by numerous questions and hesitant movements, while similar directions after the broadcast were carried out in a quieter, more independent manner. This observation was verified by other teachers during other broadcast lessons.

II.—Experimental research in school broadcasting.

The nature of the research, reported below, was only decided upon after careful consideration. Initially when the B.B.C. provided broadcasting apparatus for experimental purposes it was thought that the selection of problems would be a relatively simple matter. Two topics were tentatively chosen and a review was made of the technique to be adopted. The main variables that presented themselves were those of intelligence, age, and emotional stability of the pupils, the time, subject, and methods of presentation of the broadcast, and lastly the broadcaster. In some problems, such as length of time of broadcast and particular method of presentation, all of these variables were important, and even if a suitable technique could have been evolved conclusive evidence would not have been obtained without innumerable experiments. It is very doubtful whether this type of experimentation will ever aid in the solution of problems of school broadcasting. Such experiments would be very much like some of the earlier educational research to decide

the relative values of particular methods when so much depended upon the teacher, the material, and the children. It was therefore decided to concentrate upon the broadcast lesson itself and to find what activities were profitable and what unprofitable during the broadcasting. In addition it was decided to make carefully controlled observations of the reactions of pupils of the senior school with regard to particular kinds of material in a broadcast and with regard to general structure and vocabulary content of the talks. Finally, through an analysis of the broadcast lesson it was hoped to draw up a schedule of important points upon which teachers could record their observations.

III.—NATURE OF THE EXPERIMENTS.

The experiments were confined to the senior school. Seventy-five pupils, aged twelve and thirteen, from the "A" classes of a nearby senior school were selected for the study. All boys were given Burt's Group Test of General Intelligence: from the results their mental ages and intelligence quotients were calculated. In order to provide a control group and to facilitate valid inferences being made the pupils were cast into two groups, A and B, such that their average chronological ages and intelligence quotients were practically identical.

During the first two weeks of the research it was found that the duller boys from each group were providing interesting data, so that it was thought advisable to select a section of dull senior school boys and to note their reactions to broadcast lessons.

Consequently twenty-seven boys, Group C, from the "B" classes of the same senior school were incorporated into the experiment after their I.Q.'s had been determined.

Table I shows the distribution of the mental ages of the members of each group and of the three groups together.

TABLE I.

MENTAL AGES OF 100 SENIOR SCHOOL BOYS.

Mental Ages.	*Numbers.*			*Total.*
	Group A.	*Group B.*	*Group C.*	
15–16	2	3	—	5
14–14·9	1	—	—	1
13–13·9	9	8	4	21
12–12·9	7	8	3	18
11–11·9	10	10	3	23
10–10·9	6	6	9	21
9– 9·9	1	2	4	7
8– 8·9	—	—	3	3
7– 7·9	—	—	1	1
TOTALS	36	37	27	100

Table II gives the distribution of I.Q.'s of the three groups and of the entire group.

TABLE II.

I.Q.'S OF 100 SENIOR SCHOOL PUPILS.

I.Q.'s.	*Numbers.*			*Total.*
	Group A.	*Group B.*	*Group C.*	
120–130	2	1	—	3
110–119	1	2	—	3
100–109	6	4	2	12
90– 99	13	13	2	28
80– 89	11	14	6	31
70– 79	3	3	11	17
60– 69	—	—	4	4
50– 59	—	—	2	2

These data yield interesting information on the intellectual calibre of boys in senior schools, in this instance one situated in a poor area.[1] Six per cent show some degree of supernormality, while no less than 71 per cent fall within the range of normal I.Q.'s and 23 per cent can be deemed to be dull and backward.

If the more usual figure of I.Q. 85 is accepted as the line of demarcation between normal and dull the percentages are:

Supernormal	6	
Normal	59	
Dull	35	I.Q.'s 70-84 29%; 50-69 6%

It must be noted, too, that 6 per cent have I.Q.'s under 70.[2]

The figures cannot be regarded as final or absolutely exact, but they give a reliable indication of the distributions to be found in the various groups in a poor senior school. They reveal the absolute necessity for having large senior schools to permit organization that will cater for supernormal, normal, and dull pupils.

The vital figures relating to the two main experimental groups are set out in Table III.

TABLE III.

AVERAGE INTELLIGENCE QUOTIENTS, CHRONOLOGICAL AGE, WITH STANDARD DEVIATIONS FOR 75 SENIOR SCHOOL BOYS.

	Group A.	*Group B.*
Number	36	37
Av. C.A.	13·4	13·1
SD. for C.A.	±0·3	±0·4
Av. I.Q.	93·9	92·0
SD. for I.Q.	±8·3	±8·2

The broadcast material used was a series of lessons on the Native Tribes of Africa, the scripts of which were kindly lent by the B.B.C.

[1] Deptford.

[2] It is interesting to note that the recent Scottish Survey of children's intelligence shows 21–24 per cent between I.Q. 70–84; 3–4 per cent between I.Q. 50–69. Lewis, in his report on Mental Deficiency, finds 4 per cent in category I.Q. 50–69. It would seem that compared with the normal population the poor type of senior schools is not very heavily overweighted with dull pupils, certainly not as much as is popularly supposed.

authorities. The talks formed units of comparable length and interest for experimental purposes. Although the material used was in a sense primarily geographical, it also contained information of an everyday general nature. The results obtained were supplemented in all cases by observations from broadcast lessons in other subjects and therefore apply, in the main, to broadcasting in general in the senior school.

Mr. G. J. Cons, M.A., Lecturer in Geography, broadcast the material on each occasion from the College studio.[1]

IV.—Note-taking during broadcasts.

The first broadcast activity to be investigated was that of note-taking during the lesson. Opinions on this aspect, expressed by senior school teachers before the experiment, revealed conflicting attitudes towards the value of note-taking during a broadcast lesson. Some maintained that it helped pupils to concentrate better, others believed that it aided long distance memory, while another section took the view that it interfered with listening.

Both groups of pupils received for this experiment ten to fifteen minutes preparation, given sometimes a few days before the broadcast, at other times just prior to it. The preparation period included information on general topics related to the next broadcast.

For the first three broadcasts Group A took whatever notes they wished on paper provided while Group B simply listened. All pupils had pamphlets and atlases to follow the broadcaster's instructions. Notes, pamphlets, and atlases were collected at the conclusion of the broadcast and immediate memory tests were given. These test questions were framed on the material of the broadcast and took a variety of forms. Thus the broadcast lesson dealing with the life and occupations of the swamp dwellers in the region of the Central African Lakes was followed by questions such as the following:

(1) Underline the word which tells in which season the natives fish:

Autumn, winter, summer, spring.

(2) Put in the missing word in the sentence below.

There are miles of.....along the edge of the lakes.

[1] Not only was the variable of the broadcaster thus kept constant but a useful collaboration between subject specialist and educational psychologist was established. Both the writer and Mr. Cons felt that the experiment gained from this type of co-operation. It might be advisable that future experimental work should be planned on a somewhat similar basis.

(3) How do the natives move their canoes along?
(4) What animals do the natives hunt?
(5) "If you come to a village in the morning or evening, you will hear nothing but the rhythmic thud of pestles."
What were the natives doing?

In all tests certain questions were related to the pictures in the pamphlet.

Naturally such tests are not the sole measure of a broadcast, nor is it desirable that broadcast lessons should always be followed by tests. I have already referred to the non-testable values of enjoyment appreciation and intellectual stimulation that characterize broadcasts. On the other hand, from a teaching view-point, the occasional use of immediate and delayed tests provide a useful indication of the amount assimilated by the pupils.

At the conclusion of the third broadcast lesson, Group B took notes for the next three lessons, while Group A relied solely on listening. Any difference in the groups is thereby discounted. Immediate memory tests were given as before and on each fifth week a short simple delayed memory test was set. In all tests each boy received a cyclostyled copy of the questions. Access to pamphlets or atlases was not permitted and no time limit was observed.

A mark was recorded for each fact recalled, each reason provided or each description given. The distribution of the marks was then carefully examined and averages and standard deviations computed. The figures for six weekly broadcasts for note-takers (three broadcasts A group, three broadcasts B group) and for non-note-takers (three broadcasts B group and three broadcasts A group) are set out in Table IV.

TABLE IV.

IMMEDIATE MEMORY TEST SCORES—AVERAGES AND STANDARD DEVIATIONS FOR NOTE-TAKERS AND NON-NOTE-TAKERS.

	Note-takers.		*Non-note-takers.*	
	Average.	*Standard Deviation.*	*Average.*	*Standard Deviation.*
1st Broadcast	14·4	±2·5	13·1	±2·1
2nd Broadcast	14·7	±4·1	14·8	±3·7
3rd Broadcast	17·7	±2·3	16·1	±2·1
4th Broadcast	21·8	±3·9	22·4	±4·3
5th Broadcast	32·9	±4·8	31·9	±5·3
6th Broadcast	22·7	±2·6	23·2	±3·5

Calculation of the standard error of the difference of the means and of its reliability $\left(\frac{D}{S.E.\ diff.}\right)$ shows that there are no significant differences. Nor did an examination of the distribution of the marks reveal any significant differences between note-takers and non-note-takers. The distributions were in fact very similar.

A further examination was made of each question and the degree of success with which it was answered by note-takers and non-note-takers. This revealed the interesting fact that the non-note-taking group was superior to the note-taking group in questions involving several related points, e.g., where an answer required four consecutive points to be recalled those who were free from the taking of notes almost invariably did better. They showed their superiority in questions such as the following:

(*a*) Name three foods that the Masai live on.
(*b*) Give three reasons why the Babemba might move their village.
(*c*) Tell five things about rain in the Sahara.
(*d*) Name four ways in which the Pagans differ from the Moslems.

Sample scores on questions similar to the above were as follows:

Note-takers.	*Non-note-takers.*
9	17
36	52
75	85
25	48
54	63
81	91
40	54
23	36
28	35

The non-note-takers had maximum time and energy to follow the broadcaster carefully from point to point. The note-takers, on the other hand, abstracted one or perhaps two points as the talk proceeded to enter as notes and omitted to make mental note of other related points.

There was evidence of a compensatory nature to show that the note-takers did a little better with single factual questions such as the length of a river or the number of hours taken to carry out a particular task.

An interesting fact relating to the observational aspect of the experiment was that the note-takers appeared to be following the talk more carefully than the other group; they were listening intently and

then writing down points of apparent importance. The non-note-takers appeared to be less interested and attending less well; they would look about, fidget in their seats and play with materials. But from the written results it is apparent that no reliable judgment as to the degree of attention being devoted to the broadcast can be gained by merely looking at the pupils. It would even seem that some minor amount of unimportant activity might be an aid to listening by relieving emotional tension.

The delayed memory tests that were given five to six weeks after the broadcast were similar in type but somewhat shorter and simpler than the immediate tests.

The results, corrected in all cases on an equal group basis, are set out in Table V.

TABLE V.

AVERAGE MARKS AND STANDARD DEVIATIONS ON DELAYED MEMORY TESTS FOR NOTE-TAKERS AND NON-NOTE-TAKERS.

	Note-takers.		*Non-note-takers.*	
	Average.	*Standard Deviations.*	*Average.*	*Standard Deviations.*
1st Broadcast	13·3	±2·1	16·9	±2·3
2nd Broadcast	8·9	±1·6	12·0	±1·6
3rd Broadcast	11·1	±1·9	13·1	±1·8
4th Broadcast	14·2	±2·3	17·3	±2·4
5th Broadcast	16·2	±1·9	18·9	±1·8
6th Broadcast	12·3	±1·4	15·4	±1·7

Calculation of standard errors of the difference of the means and application of the reliability ratio (D/SE diff.) reveals significant differences in four out of six instances. It is a valid conclusion then to state that, in delayed recall of material from the broadcast lessons pupils who do not take notes are slightly superior to those who take notes. This is possibly due to the fact that non-note-takers:

(*a*) Were better able to devote all their attention to the broadcast;

(*b*) Were better able to understand and grasp series of related facts;

(*c*) Obtained a more proportioned understanding of the talk as a whole;

(*d*) Set up consciously or unconsciously the attitude that they must understand and mentally note the information presented as there was no other means of recording it.

This last point is similarly related to the two different student attitudes, the first one of slavishly summarising a book and later remembering little, the second one of reading it through and remembering as much as possible. In the first attitude the mind is to some extent deprived of the mental stimulus to understand and to retain, and it was the same with the note-takers during the broadcast.

It is possible that had the note-takers been allowed to see their notes they might have slightly improved their scores. But even this partial temporary refreshing of their memory for test purposes would not have had any very lasting effect. The correlation between notes taken and amount recalled on the immediate tests is only 0·35.

The significant point is that the non-note-taking group, without any intermediate revision, recalled more than the note-takers after a lapse of five weeks.

V.—The use of pictures in broadcast lessons.

The value of pictures in broadcast lessons was investigated in detail. For each of ten broadcasts a number of questions relating to illustrations in the pamphlets were included in the immediate memory tests. In some cases the question was partially related to one of the four pictures which were used during each talk; thus pupils would be required to answer the following:

> "Give four words or phrases about the country in which the Masai lived."

In this instance, three of the pictures in the pamphlet showed the type of country in which the Masai lived, although this was not the main object for which the illustrations were reproduced. Most pupils, however, looking at them would obtain the necessary information, although no specific reference had been made to this aspect of the pictures during the lesson.

In a second type of question the pupils were asked to describe a picture or part of it in detail, while a third variation of test items connected with pictures involved a certain amount of inference; children had to use what had been given during the talk and combine it with careful observation of the picture before the question could be answered.

A comparison between scores obtained on questions related, directly or indirectly, with pictures and those bearing only on the information of the broadcast is set out in Table VI.

TABLE VI.

PERCENTAGE OF MARKS OBTAINED ON PICTURE AND NON-PICTURE QUESTIONS.

	Picture questions.		*Non-picture questions.*	
	Number.	*Marks.*	*Number.*	*Marks.*
1st Broadcast	3	79·6	17	50·9
2nd Broadcast	3	69·6	17	41·3
3rd Broadcast	7	86·3	14	66·1
4th Broadcast	8	81·0	12	61·1
5th Broadcast	3	67·2	16	60·5
6th Broadcast	6	78·4	12	64·2
7th Broadcast	6	62·8	12	63·8
8th Broadcast	8	85·3	12	58·9
9th Broadcast	7	79·4	11	60·1
10th Broadcast	5	87·3	14	55·8
AVERAGES....	5·6	77·7	13·5	58·3

The results reveal a decided advantage in favour of questions relating to pictures. This is more marked when it is remembered that in questions involving a description of an illustration the number of facts that could possibly be related was taken as the maximum, whereas in textual questions involving at most eight facts, but often only four, there was a more easily obtainable maximum.

Closer examination of the tests shows that where the question was directly dependent upon the picture the accuracy of recall was not infrequently as high as 85 per cent. It is evident that for senior school pupils the selection of good illustrations[1] for the pamphlets is of vital importance and that maximum use should be made of these in framing

[1] Sometimes the pictures had little real teaching value. See for samples of good teaching pictures *Regions of the World in Pictures*, by G. J. CONS, M.A., University of London Press, 1935.

the broadcast material. Instructions of the broadcaster to listeners regarding pictures should be clear and comprehensive. Moreover, sufficient time should be allowed for examination of the pictures to elicit facts asked for or understand points remarked upon.

VI.—The value of preparation for broadcasts.

Four broadcast lessons were allotted to investigating the value of the preparation period. Before the actual broadcast took place the boys in Group A received twelve minutes teaching on topics related to the material. Thus preparatory to the talk about the Tuaregs of the Sahara, the position, size, and some of the main climatic factors of the Sahara were briefly discussed. Group B received no preliminary information. For broadcasts number three and four the groups were reversed with respect to preparation. Group B were taught beforehand while Group A had no introductory material.

Table VII shows the results obtained from the immediate memory tests given after each broadcast.

Table VII.

Scores obtained by groups with preparation and without preparation.

	Preparation.	*No Preparation.*
1st Test	18·4	16·3
2nd Test	16·9	14·2
3rd Test.....	12·1	11·1
4th Test.....	24·8	21·3

These results show significant statistical differences and indicate the value of a well-planned preparation. A perusal of the tests showed that the preliminary talk is of most use in questions involving inference. The pupil having had some previous relevant knowledge was able to link it up with the material presented during the broadcast and to grasp the implied relationships more quickly and more accurately, as a result of which questions were answered more intelligently.

In addition to this association value, the preparation period produces a better attitude towards the broadcast and enhances enjoyment for

the children. The skilful teacher can invent numerous attractive preparation methods, which need not occupy more than ten or twelve minutes and into which an element of the drama or the puzzle can be introduced. It is helpful to allow children to prepare their own outline maps or diagrams or to read related material. All this could be better carried out if teachers were provided with fuller details of lessons to be given.

VII.—BROADCASTING WORK FOR DULL PUPILS.

The broadcasting results of the dull children in Groups A, B, and C were carefully examined. There were in all thirty-three boys, fifteen from Groups A and B and eighteen from Group C. Table VIII shows the distribution of the I.Q.'s of these boys,[1] all of whom were between the ages of 12·1 and 14·0.

[1] It must be remembered that the boys came from a school of 200 pupils situated in a poor part of S.E. London.

TABLE VIII.

DISTRIBUTION OF I.Q.'S OF THIRTY-THREE DULL SENIOR SCHOOL BOYS TAKING BROADCAST LESSONS.

I.Q.'s.	*No.*
80–84	12
75–79	10
70–74	5
65–69	3
60–64	1
55–59	2

The distribution reveals that theoretically the groups were fully representative of the dull pupil. Their number included six whose I.Q.'s were below 70. A perusal of their school placement showed that 15 came from " A " classes in the senior school while 18 were in " B " classes. Intellectually the group was not promising. Nor were their academic attainments very high. The group contained three non-readers, i.e., mental age for reading below seven, and four whose reading

was weak, i.e., mental age for reading eight to nine. In power of written English eight of them exhibited a weakness.

Their immediate memory tests results for ten broadcasts are set out below.

TABLE IX.

IMMEDIATE MEMORY TESTS OF NORMAL AND BACKWARD SENIOR SCHOOL PUPILS.

	Normals.	*Backwards.*
1st Test	13·8	10·5
2nd Test	14·7	9·2
3rd Test	16·9	11·2
4th Test	22·1	16·9
5th Test	32·5	23·3
6th Test	22·9	15·4
7th Test	25·1	18·1
8th Test	19·8	14·3
9th Test	16·4	11·6
10th Test	25·9	18·4

These results certainly indicate significant statistical differences between the scores obtained by the two groups, but this is only on a basis of relative amounts remembered. When the individual papers are examined and the distribution of scores of normals compared with those of the subnormal pupils it is seen that dull children can profit considerably from broadcast lessons. The amounts recalled by dull pupils vary from 35 to 55 per cent, this is not including two cases with I.Q.'s 59 and 57 whose percentages for memory tests are only 29 and 23 respectively. For the normal group the range is from 41 to 90 per cent. It is not unlikely that these amounts remembered by the backward boys would not be any less than those assimilated from ordinary class lessons.

Table X shows the percentages of marks scored on tests after ten different broadcasts, by four boys of supernormal intelligence, four boys of normal intelligence, four boys with I.Q.'s between 80 and 84, and four boys with I.Q.'s between 70 and 79.

TABLE X.

SCORES ON TEN BROADCAST TESTS OF BOYS WITH I.Q.'S VARYING FROM 122 TO 70.

Test:		1	2	3	4	5	6	7	8	9	10	
		Scores.										*Average.*
Pupil	*I.Q.'s.*											
A.	123	68	66	92	88	76	85	75	71	82	67	77·0
B.	122	52	62	66	91	62	68	55	61	70	54	64·1
C.	120	77	63	88	88	84	89	74	75	81	76	79·5
D.	111	69	65	74	90	73	68	74	69	75	69	72·6
E.	100	60	62	82	66	77	64	50	60	61	55	63·7
F.	99	62	50	77	65	48	77	66	52	65	53	61·5
G.	93	62	49	86	77	76	67	50	51	55	49	62·2
H.	88	33	31	39	51	62	63	51	49	51	51	48·1
I.	84	60	25	66	55	50	48	33	45	51	42	47·5
J.	83	52	25	33	55	50	60	50	48	51	44	46·8
K.	83	32	50	52	60	55	49	43	31	48	47	46·7
L.	80	43	50	66	48	51	37	51	46	49	50	49·1
M.	78	60	20	50	52	41	25	41	35	42	38	40·4
N.	76	33	29	51	48	55	51	48	45	49	43	45·2
O.	75	60	54	60	51	50	44	35	58	61	51	52·4
P.	70	37	38	44	42	49	38	30	37	35	39	38·9

From these examples, selected at random, it will be seen that some backward boys, considering the limitations of their innate intellectual equipment, recall a creditable amount compared with normals and super-normals. Case O with an I.Q. of 75 is definite proof that wireless lessons can make an appeal to pupils of even low intellectual powers. The view-point that broadcasting to dull pupils is ineffective because an appeal is made only to the auditory sense is not borne out by the result of this investigation. It is possible that broadcast lessons used scientifically as an occasional teaching device are as effective with dull pupils as with normal ones. The subjects selected must be appropriate—travel

talks, descriptive geography lessons, history dramatizations, short plays, and everyday events—and must be framed in suitable language. The distractions and some of the accompanying inhibitions that have, for the dull pupil, always been present do not characterize the broadcast lesson. Naturally careful preparation is necessary and follow-up activity is advisable. There was conclusive evidence, too, that the backward boys really enjoyed the broadcasts and were ready to discuss them afterwards and to bring along material and pictures related to the information obtained. Not the least effective parts of the experimental broadcast series were (*a*) the questions asked at the conclusion, (*b*) the amount that the children were able to write down. As a stimulus to written English the lessons appeared to be far more effective than the ordinary composition periods. There was quantity if not quality in their efforts and with backward children this increase in the expressional aspect is perhaps the most important effect.

VIII.—Additional information from tests and from records kept during the broadcasts.

The information set out in the following paragraphs is based on observations carefully recorded during the course of broadcast lessons (covering almost five months). They have been supplemented in two ways; firstly, from similarly-recorded observations of teachers in senior schools taking a variety of broadcast lessons, and secondly, from isolated tests and questionnaires given after various broadcasts.

(*a*) *Length of time for broadcasts to senior school pupils.*

Records of reactions of pupils during the weekly broadcasts indicate that, for the average senior school pupil, 25 minutes or even 20 minutes is too long. Observations point to 15 or 18 minutes as the most useful time span for such pupils. This conclusion gains support from an examination of the test questions on material set out in three-minute sections. Not infrequently there is a decrease in the information recalled after 15 to 18 minutes.

(*b*) *Nature of material for broadcasts in senior schools.*

For senior school pupils the material broadcast must be clear, simple, and interesting. It should be clear in so far as it has a logical basis of development, and the various points or aspects of the talk are linked logically one with the other. It was most noticeable in the immediate and delayed results that when a talk was developed so that point

A led on to B and B to C and so on, the children understood and retained more than if it was simply a rambling talk no matter how interesting the material might have been. The matter presented should be simple, that is the language used should be such that children of below normal intellectual powers could understand it easily. It reduces the value of the broadcast if the vocabulary is difficult. In this respect it would probably be better if broadcasts for senior schools could be differently cast from those for central and secondary schools, but even pupils in the latter types would gain by simplification of the structure of the talk. Thirdly, the talk must be interesting to children whose outlook is far from an academic one. It must link up with their general interests. It must make the history, geography, or hygiene really vivid and attractive. Descriptive material should be related to the activities of the pupils and to their fundamental interests—how the people lived in particular countries, how they dressed themselves, descriptions of how houses were built, what other children did, how a particular process affects their health. Such material is enjoyed and remembered. The material must be humanized and individualized ; if it becomes too factual and abstract it fails to appeal. Not a few of the talks were entirely devoid of humour, yet a skilful class teacher makes excellent contact with pupils through humour. Where a lighter vein was introduced into a talk, it appeared to relieve the tension of listening, to stimulate the pupils to fuller attention and to unify the group towards the broadcaster.

Material that arouses vivid visual imagery interests the child and is recalled. An excellent example of this is given below :

" So all the sand has to be cleared out. This is done by scraping it up into baskets, which the natives carry on their heads up the steep slopes of the sand-hills to the top, where they are emptied. Rich men employ donkeys to carry for them. It is so hot in the oasis in the daytime that this work has all to be done at night. All night and every night there is a constant stream of natives toiling up and down the slopes with heavy baskets of sand on their heads. But like so many Africans they sing cheerfully all the time."

Sentence structure, vocabulary and development of the description are here well suited to the mentality of the senior school child.

Details of how things were made and how particular operations were carried out were adequately understood. A standard example from suitable material ran as follows :

"Listen : a long wooden board is fixed across the bed of the stream close to where it flows out of the well, and in the board are cut notches for the water to flow through. There is one notch for each of the owners

and from each notch a little ditch carries a thin but very precious trickle of water to the land of the man who owns that particular notch. In this way the stream is divided up into a number of little streams. The notches aren't all the same size. This is because some of the owners gave more money or work towards making the well than others and therefore have to have larger notches than those who gave less work or money."

Although this involves a certain elementary power of following an argument yet it was understood and remembered because of the concrete setting. Even dull boys appreciated the relationships involved and were able to discuss this and allied water problems, similarly presented, of the oasis dweller in an intelligent way.

In general, the children obtained least from talks that were disjointed, too difficult in outlook or in phrasing, that were not related to knowledge at present possessed or that were not bound up with the course as a whole.

Good material is interesting; it stimulates the imagination without being over-emotionalized and it produces constructive activity.

(*c*) *Preparation for the broadcast.*

Before commencing a broadcast lesson it is advisable to see that the pupils are seated in positions so that no one occupies a place where the angle from the loud speaker is too acute. All external preparations should be done beforehand. The pupils should make themselves comfortable and put their materials ready before the broadcast commences. A few minutes of quietness with an atmosphere of expectancy is conducive to the best listening.

(*d*) *Use of pamphlets, atlases, pictures, maps, and other material.*

The use of pamphlets is a most important part of the broadcast. In the first place it is advisable to allow pupils to look right through the pamphlets at the beginning of a course, otherwise pictures unseen and material unread will distract them from the broadcast in progress. Furthermore, information from all the pictures and from the series of brief summaries aids preparation and gives variety to the course. It is not advisable for pupils to take notes of any sort, however brief, and to try to look at the pictures as well. Earlier sections of the research have demonstrated the paramount value of pictures and the very doubtful value of notes. Apart from respective values of the two aids, it was noticed during each broadcast that from 30 to 40 per cent of the note-takers failed to look carefully at the pictures; they were intent on taking notes and thus missed a vital visual aid for remembering.

In many broadcasts it was evident that insufficient time had been spent over the pictures. There is need to pause longer and repeat more when working from pamphlets, books, or atlases. The child's attention had been barely switched on to the picture when it was again diverted to the broadcast material. As the pictures are so valuable for understanding and recalling the information presented it is imperative that a better technique for their use during broadcasts should be followed. An outstanding weakness at present is the abrupt change that the broadcaster makes from references to the pictures to the talk proper. Without a word of warning he leaves the illustrations and continues to deliver more information while not a few pupils are still occupied with the pictures. It is only after a sentence or sometimes more has passed that the pupils realize that the broadcaster is no longer concerning himself with the illustrations, diagrams, or maps; but has returned to the ordinary material. An intermediate step with pauses is necessary. Some such phrases as "Now we shall leave the picture," or "Now we shall turn to the point we were discussing," would be valuable.

In some instances diagrams and maps could be more effectively used from the blackboard. In several talks this was done and a noticeable improvement accrued. For duller pupils it is doubtful whether they should try to work from atlas and pamphlet, or book and pamphlet, and they certainly should not try to do three things while they are also taking notes. To attend to the pamphlet and to listen to the talk are as much as senior school children should be required to do; otherwise there are too many activities to change from one to the other successfully.

(*e*) *Teacher's part during the broadcast.*

The teacher should not remain inactive during the broadcast but should co-operate with the boys in a kind of group activity spirit. He should be on the alert to help boys quietly with a book or a pamphlet. It is not advisable for him to write new words or names on the blackboard—this should be done beforehand. He can profitably point to pertinent parts on a map or diagram when the broadcaster mentions them in his talk.

IX.—CORRELATION WITH OTHER MEASURES.

Success in broadcasting as measured by the scores of immediate memory tests was correlated with the general intelligence test results and a ratio of $0{\cdot}42 \pm {\cdot}05$ was obtained. With delayed memory tests the ratio was $0{\cdot}41 \pm {\cdot}04$. In addition tests of visual and auditory memory—lists of three-letter concrete nouns—were given and scores from

these were correlated with scores from the broadcast tests. The ratios were $0{\cdot}36 \pm {\cdot}04$ and $0{\cdot}31 \pm {\cdot}045$ for auditory and visual memory for words respectively. The highest correlation was that obtained between emotional stability and success in the broadcast tests. The first named was assessed in conjunction with the teachers by selecting a number of emotional factors, such as persistence, initiative, concentration, and allotting marks for these and for general emotional stability. The ratio obtained was $0{\cdot}53 \pm {\cdot}035$. Scores in the immediate and delayed tests were also correlated with ability in written English as judged by three different compositions. The correlation ratio derived was $0{\cdot}51 \pm {\cdot}04$. It would seem that of the main factors for pupil success in school broadcasting verbal ability and emotional stability do not assume an any less important rôle than that of general intelligence.

X.—Summary of conclusions.

(1) Results of the study, i.e., from experiments and from classroom observations, emphasize the fact that school broadcasting is purely supplementary. It is limited with regard to subjects and with regard to the type of material it can profitably present.

(2) Broadcast lessons can vitalize certain parts of the school curriculum. There is evidence from the research that it arouses in pupils intellectual curiosity and develops independence and initiative, in particular, in the desire for more information and in general, in their attitude towards instructions and directions.

(3) It is evident from the out-of-school interests of the senior school pupils that school broadcasting has a value in training for leisure.

(4) While some broadcasts are merely for listening, others provide both for teachers and pupils specialized information, not always obtainable elsewhere, and at times enhanced by the personality and the intimate knowledge of the broadcaster.

(5) The numerous variables that present themselves in experimental work in school broadcasting make technical investigations difficult. It is doubtful whether studies which involve many experiments in an attempt to prove the value of a particular method, when so much depends upon material, will ever contribute greatly to the solution of problems of school broadcasting. Emphasis should be placed upon improving the general technique of the broadcast lesson—preparation, broadcast and follow-up—by simple experiments and through classroom experience.

(6) As the result of careful controlled experiments it was clear that for these senior-school pupils note-taking of any kind was an

unprofitable activity. In several directions, particularly in tests of delayed recall, non-note-takers have the advantage.

(7) Experimental results show that for senior school pupils the selection of good teaching illustrations for the pamphlets is of vital importance and that maximum use of these should be made in framing the broadcast material.

(8) Instructions to broadcast listeners regarding the pictures should be clearer, simpler, and permit of more time for examination of the pictures.

(9) Controlled experimental evidence on the value of the preparation period was obtained. It shows the value of a well-planned short preliminary teaching period, particularly with regard to parts of the broadcast requiring a quick grasp of relationships and to test questions requiring reasoning.

(10) Broadcast lessons used scientifically as an occasional teaching device are as effective with dull pupils as with normal ones.

(11) Broadcasts arouse in dull pupils an attitude towards academic aspects of school work that is not always present under ordinary classroom conditions. The broadcast lesson is for dull senior school pupils a definite stimulus to written English.

(12) Broadcasts for senior school pupils should usually not exceed 15 to 18 minutes if maximum value is to be obtained.

(13) The material of broadcasts for the senior school should be clear, simple, and interesting.

The main faults at present are in the vocabulary burden and the structure of the talks. Descriptive, humanized material in a concrete setting is best understood and remembered. Material that arouses vivid visual imagery helps the pupils. In general, pupils obtained least from talks that were disjointed, too difficult in outlook or phrasing, and unrelated to knowledge already possessed.

(14) The use of related material such as maps, illustrations, pamphlets, diagrams, needs careful consideration. For the senior school child two activities to engage upon during the broadcast are sufficient—namely, the use of the pamphlet and listening to the talk. Other material should be placed on the blackboard and children should be made conversant with it beforehand.

(15) There is need for an intermediate step between looking at the pamphlets and return to the broadcast proper.

(16) For the pupils' benefit through school broadcasting the factors of emotional stability ($r=\cdot53$) and general verbal power ($r=\cdot51$), in addition to that of general intelligence ($r=\cdot42$), appear to be of most importance.

RÉSUMÉ.

LA RADIO-DIFFUSION DANS LES ECOLES PRIMAIRES SUPÉRIEURES.

A cent élèves, âgés de 12 à 13 ans, on appliqua des tests d'intelligence, puis on les divisa en trois groupes, un groupe de contrôle, un groupe expérimental et un groupe d'élèves peu doués. On leur fit écouter une leçon de radio par semaine. L'observation contrôlée, les tests préliminaires et les tests de mémoire, immédiate et retardée, révèlent les faits suivants :

(1) Il vaut mieux ne pas prendre des notes pendant les leçons.
(2) On devrait employer au maximum les tableaux pendant les leçons puisqu'ils forment une base supplémentaire et concrète à la radio-diffusion.
(3) Les leçons pour les élèves des classes supérieures devraient durer de 15-18 minutes.
(4) Une préparation brève et bien conçue avant la leçon en rehausse de beaucoup la valeur.
(5) Les élevès peu doués peuvent tirer un profit considérable des leçons appropriées à leurs capacités.
(6) Pour les élèves de 11 à 13 ans les leçons par le radio devraient être exprimées dans un langage clair et simple, conçues sur une base logique et liées aux intérêts les élèves.
(7) La stabilité émotive et la puissance verbale des élèves, aussi bien que leur niveau d'intelligence générale, sont importantes pour le succès de la radio-diffusion pour écoles.

ZUSAMMENFASSUNG.

RUNDFUNKUNTERRICHT IN DER SENIOR SCHOOL. (ENGL. VOLKSSCHULE.)

Hundert Schüler im Alter von 12 und 13 wurden auf ihre Intelligenz geprüft und in eine experimentelle, eine Kontrollgruppe, und eine Gruppe fur Zurückgebliebene eingeteilt. Sie erhielten wöchentlichen Rundfunkunterricht. Kontrollierte Beobachtungen, Tests vor dem Versuch und Gedachtnisprüfungen sowohl unmittelbar nach dem Unterricht als auch längere Zeit danach ergaben folgendes :—

(1) Es ist nicht empfehlenswert, Notizen während des Rundfunkunterrichts machen zu lassen.
(2) Man soll so viel wie möglich von Abbildungen während des Unterrichts Gebrauch machen, da sie eine ergänzende, konkrete Basis für das gesprochene Wort bieten.
(3) Der Funkunterricht für Kinder der höheren Klassen der Volksschule soll nicht länger als 15 bis 18 Minuten dauern.
(4) Eine kurze gut ausgearbeitete Vorbereitung erhöht den Wert des Funkunterrichts beträchtlich.
(5) Auch die weniger begabten Kinder können viel von einem angepassten Rundfunkunterricht haben.
(6) Übertragungen für Kinder von 11 bis 13 müssen klar und einfach ausgedrückt sein, logisch aufgebaut und sich auf die Interessen der Kinder beziehen.
(7) Seelisches Gleichgewicht, Redegewandtheit und allgemeine Intelligenz der Kinder tragen weitgehend zum Erfolg des Rundfunkunterrichts bei.

THE SUBNORMAL MIND.

By CYRIL BURT. (Oxford University Press, 1935. pp. vii+368 10s. 6d.).

PROFESSOR BURT is among the few men of science who write like men of letters. As a result, his books are not only loaded with significant facts and principles, but are at the same time eminently readable. His latest book is no exception. It differs from his earlier books, which were mainly direct accounts of original researches, in being based on a series of lectures—the Heath Clark Lectures, delivered in 1933 at the London School of Hygiene and Tropical Medicine. While it suffers, therefore, from the disadvantage of presenting fewer of Dr. Burt's own contributions to the science of psychology, it has the compensating advantage of providing a broad and comprehensive view of all that is worth knowing in that field of learning which the author has made peculiarly his own.

It opens with a brief account of the normal mind, treated with a view to defining the various departures from the normal. The author allies himself with no special school of psychology. He certainly is no behaviourist. He regards the biological standpoint far more helpful than the physiological; and, apparently, the purely psychological more helpful than either. In dealing with neuroses, about which he has much to say, he contends that "we know far more about the nature of mental processes than we do about nervous processes. It is, therefore, far more helpful to think of neurotic disorders in psychological terms than in anatomical." In discussing the relative weights to be attached to nature and nurture as causal factors in abnormal states, he takes the *via media*. He thinks that the relation between the two factors is different in the realm of temperament from what it is in the realm of intellect. "Inheritance," he says, "or innate constitution, limits character far less rigidly than it limits intelligence. It is far more hopeful to try and improve the morally defective than the intellectually defective; and it will always be safe to infer that some particular temperamental quality must be beyond all cure because it seems inherited, or at any rate inborn." To the educator this is a consideration full of cheer.

The next section deals with the mentally deficient. Here Professor Burt shows how the two Acts of Parliament dealing with mental deficiency differ both in the criteria they adopt and in the degree of defect which they hold to be necessary for certification. In the Mental Deficiency Act the crucial test is social adaptability; in the Education Act it is

educational capacity. One applies to adults and the other to children. The consequence is that children certified under the Education Act are often de-certified when they are old enough to go out into the world. The inference seems to be that it requires more brains to succeed in school than to succeed in life. A distinction is also made between the two ways in which mental deficiency may manifest itself (for "mental" refers to mind, and mind is more than intellect), namely intellectual deficiency and temperamental deficiency, which is commonly, though inappropriately termed moral deficiency. Of the two the latter is, contrary to popular opinion, extremely rare. The question is raised whether mental deficiency is on the increase, and the answer given is a doubtful affirmative. Statistics seem to point that way but they are too uncertain in their origin and their interpretation to be taken as conclusive. Assuming it to be an established fact that mental deficiency is increasing, Dr. Burt accounts for it on the ground that mentally defective, and low-grade families generally, breed more rapidly than the rest of the population. He goes on to say: "One is tempted to express the fact as an arithmetical law; the smaller the brains the larger the family." It is difficult, however, to see how this law should be operative during the last quarter of a century covered by the statistics and not operative during the centuries that have passed. And if it has been operative in the past how extraordinarily intelligent our remote ancestors must have been! Or perhaps the recent spread of birth control has something to do with the phenomenon. It has spread among the wrong people.

The next section deals with the Dull and Backward, that is with children whose I.Q.'s range between 70 and 85. Dr. Burt has rendered signal service to education by clearly marking off this group of children from the mentally defectives, and in calling attention to their peculiar needs. He disposes of certain myths which have long had lodgment in our minds. For example: "It has proved exceedingly hard to find a single indisputable instance of congenital 'word-blindness."

The importance of distinguishing the dull from the defective is illustrated in the next section, which treats of the Delinquent. Wild statements have been disseminated by psychologists of high repute about the relationship between mental deficiency and crime. The percentage of mentally defectives among the children appearing at the juvenile courts of America is variously reported to be 50, 60, 80, and even 90 per cent. Dr. Burt gives the percentage among similar cases in England as ten. Among the numerous cases which he himself has studied the percentage is only eight. When, however, we bring in the

dull as well as the defective, we have a different tale to tell. It is from the dull classes that criminals are in the main recruited. Four out of every five of Dr. Burt's cases of delinquency fall below the average of mental ability.

The next three sections deal with various types of neurosis. Indeed nearly a third of the book deals with that special form of subnormality. But limitations of space prevent me from saying more than that the sections should be read with care by all those who have dealings with difficult and unstable children. This, moreover, is a remark which applies to the whole book.

P. B. BALLARD.

BOOK REVIEWS.

Factor Analysis in the Study of Personality: By JOHN CLEMANS FLANAGAN. (Stanford University Press, Stanford University, California, 1935. Mr. Milford, Oxford University Press, London, E.C.4. x+103 pp. 6s. net.)

In this booklet the term "personality" is used in its wider sense to include cognitive ability and temperamental traits.

The work opens with a useful summary of different methods of factor analysis, and of the more controversial points in the interpretations of the results obtained by such.

The author then subjects three sets of correlational data to analysis by the Hotelling technique, viz.:

(1) The performance of 497 students in fourteen courses of the curriculum of the U.S. Military Academy, including subjects such as English, Law, Mathematics, Drawing, etc.

(2) The performance of 1,046 students in ten achievement tests in subjects such as Spelling, Literature, Mathematics, General Science, etc.

(3) The scores of 305 eleventh-grade boys on the four scales of the Bernreuter Personality Inventory (temperament traits).

In the first two cases three common factors are considered adequate to explain the inter-relations of the subjects. These are obviously not unitary; for example, the most important factor in the first case, accounting for 65 per cent of the total variance, is described as mostly "due to industry, which is itself a complex of such things as interest, purpose, temperament, perseverance, motivation, etc.," together with Spearman's *g* (page 33). It is difficult to see what useful purpose is served by such an analysis; unless recognized reference tests are included in the experimental data, the interpretation of any factorial analysis must be mainly a matter of surmise.

The temperamental qualities assessed in the third investigation are analysed into two factors, designated self-confidence and sociability. Whether this is an over-simplification cannot be ascertained in the absence of reference tests; the conclusions therefore must be taken as only tentative, but they provide some addition to our inadequate information on the subject.

Finally, mathematical techniques for obtaining uncorrelated test scores, and for eliminating the spurious correlation of chance influences, are described, and a valuable bibliography of the subject is provided in the appendix.

The National Institute of Industrial Psychology, Report 5. (2s. 6d.)

This report gives an account of the research work carried out by the Institute during the years 1921-34. It gives a brief summary of the experiments which have been carried out in connection with vocational guidance and vocational selection and with industrial problems in general. The researches have included a study of intelligence tests, tests for manual skill, mechanical ability, temperament and character; they also include enquiries into the working conditions and requirements of various occupations; researches in effects on work of ultra-violet rays, rhythm, miners' standard electric lamp; methods of picking and packing fruit and hops, of milking cows, of laying out farms, and numerous other subjects in factories, mines, offices, etc., of firms which have asked for the Institute's services; researches in Institutes for the Blind, in schools, and in domestic working conditions, as well as researches in the psychological laboratory when such seemed necessary.

But as Dr. Myers points out in his preface the object of the report is two-fold, to review past work and to make an appeal to the general public for funds if the work is to continue. The paid work of conducting investigations for businesses in order to reduce wastage can continue, so too can the work of vocational guidance for which a fee is charged, but even here the work is bound to suffer severely

if funds for further research cannot be found. The advances which have been made have opened up a vista of vast fields still to be explored, and it is unthinkable that the work of the National Institute of Industrial Psychology, work of the greatest importance to the individual and to the nation, should for long be seriously hampered much less ended, for lack of funds. Suggestions are made on page 33 as to how help may best be given. The chronological table of the Institute Research work (p. 34) gives an idea of the number and scope of the researches carried out; it also indicates the sources financing each piece of work. This table forms a useful bibliography for those studying the subjects included.

The Theory and Practice of Education: By NANCY CATTY. (Methuen. pp. 257. 6s.)

The greater part of this book is concerned with the application of psychological principles to educational problems. Some of the defects of over-simplification and general application of certain psychological principles can perhaps hardly be avoided in a work of this nature, but in this case they do not assume dangerous proportions and on the whole the author shows a familiarity with psychological thought and the progress of psychology not always found in educational writings. The aim of the book is to show concisely the close connection between sound theory and modern methods of school organization and teaching, and to help the modern teacher in the solution of teaching problems. It would be unreasonable to expect exact and detailed proofs of all statements made, but occasionally curiosity is aroused as to the origin of certain statements, such as the affirmation that visualists have "sight for best sense" and audilists have excellent hearing and "vast stores of auditory images that can be called upon" (page 86). Students should find stimulation, help, and information in this book, particularly if advantage is taken of the good guidance in reading given for each chapter. The method of compilation of the bibliography suggests a familiarity with the books included which will not be shared by all readers, and names of publishers might with advantage have been added. Also more care might have been taken to avoid carelessness in form of expression, as for example on page xi, line 24, and on page 33, line 1.

Choosing a Career: By E. D. LABORDE. (Heinemann. pp. 312. 5s.)

Publications concerning the choice of a career become more and more common and are likely to go on doing so for some time to come, as the need for vocational guidance becomes more and more generally recognized. The writer of this volume does not profess to have given a scientific or thorough treatment of the subject, and the reader who expects to find a solution to all his problems will be disappointed; but we are given an interesting record of information and ideas gleaned or formulated in the actual experience of the author as Careers Master at Harrow School.

Throughout the book common sense and practical considerations are predominant, the happiness of the career-seeker and his suitability or unsuitability for a given career are not ignored, but they are certainly not over-emphasized. The existence of recent psychological methods applied to vocational *guidance* are mentioned, but it is hardly admitted that these are superior to older methods. The title of the book is progressive, but the outlook expressed inside is conservative, and to the present reviewer seems to concentrate too largely on vocational *selection* and the employers' needs. Vocational *guidance* by psychological and scientific methods (even if still incompletely developed) cannot be divorced from vocational *selection* whether we are aiming only at the satisfaction of the employer or at the mutual satisfaction of employer and employee—which is of course the proper aim, and is in fact the ultimate aim of the writer of this book.

An Introduction to Educational Psychology: By COLEMAN R. GRIFFITH. (Farrar and Rinehart. 1935. pp. 735.)

To write this book of 753 pages packed with information, advice and suggestions must have been no easy task, and the author has good reason to be proud of his achievement. He aims at reaching teacher, student, and psychological experimenter,

to bring them into closer understanding and touch with each other. No student, and indeed no teacher or experimenter, however industrious, could be expected to read the book straight through, but it seems safe to say that no serious student of educational psychology, or, if one may call it so, of psychological education, will regret having a copy on his bookshelves, to dip into and refer to as necessity and opportunity arise.

One refreshing quality is the way in which the author tackles controversial subjects openly, and definitely expresses his considered opinion, with evidence—sometimes provocatively, nearly always progressively. More than one example cannot be quoted, but one striking case is in connection with methods of teaching writing. We are told that there is some evidence to indicate that the complete abandonment of handwriting as a part of formal school training might be a desirable thing and that one or more of the common systems of shorthand might be substituted (p. 86).

There are very numerous book-references and suggested readings, mainly, though not entirely, American.

University of Iowa Studies, 1934. Studies in Education. (Educational Psychology Series, No. 2. Vol. IX, Number 5.)

This volume contains three studies in the psychology of learning:

(1) Discovery VS Authoritative Identification in the Learning of Children, by T. R. McConnell.
(2) The Rôle of Insight in the Analytic Thinking of Adolescents, by Lyle K. Henry.
(3) Characteristics of Problem-Solving Behaviour of Adults, by Chellen Morgan.

The first of these three investigations deals with the learning by two procedures of one hundred basic addition and one hundred basic subtraction facts; the second seeks to test the hypothesis that the mental behaviour observed in solving originals in geometry under controlled conditions can be adequately and correctly described as the operation of "insight": the third study observes the process of learning in the case of young adults faced with a complicated puzzle admitting of sensori-motor manipulation and gradually increasing cues.

It is impossible to give even a brief summary of the results gained, but the studies should be read by everyone interested in the psychological investigations of learning and problem-solving.

Educational Psychology: By CHARLES FOX. Third Edition, completely revised and rewritten. (Kegan Paul. pp. 442. 10s. 6d.)

In this new edition of an excellent and well-known book, certain important changes have been made. Mental heredity is regarded by the author as the kernel of many problems in educational psychology, and mental tests, including child and vocational guidance, have become increasingly important, so that chapters on these two subjects have been added. Certain chapters have been extended to keep pace with modern thought, psycho-analytical doctrines receive more attention—so do æsthetics, in recognition of the importance of æsthetic education. A section on human instincts has been added to the chapter on habit. The chapter on mental fatigue has been omitted, but the reader is provided with references to a full treatment of the subject elsewhere. An ample though cumbrously arranged bibliography is given. The student can have the satisfaction of knowing that in reading this book he is reading one of the best of its kind available. For a future addition one might suggest a better system of references, the complete revision of the altogether inadequate index, and a chapter on thought.

Differential Diagnosis of Ability in School Children: By DAVID SEGEL. (Warwick and York, Inc., Baltimore, U.S.A. 1934. viii+86 pp. $1·40.)

The differential diagnosis of the ability of an individual is defined as "the discovery of strengths and weaknesses in an individual." The author points out

that education *en masse* tends " to level a child's gifts and deficiencies into a monotonous plane," and that " teaching is directed more towards defects than towards strengths " ; the greater importance of developing the superior abilities of a child is emphasized.

The efficiency of tests in diagnosing differences in ability in school subjects is thus brought into prominence, and a mathematical technique to determine such efficiency is described.

Finally, the reader is given useful lists of American tests which have been found of value in making these diagnoses.

Psychology and Health: By H. BANISTER. (Cambridge University Press. 7s. 6d. 256 pp.)

The author states that the object of his book is to promote the understanding of psychological factors in the treatment of both physiological and mental illness. Though not himself a medical man, he has in writing had medical men partly in view, and his opening chapter deals with psychology and the physician. The book is of much wider appeal, however, than that. While the topics are such as are intimately concerned with questions of health, including the effects on the mind of ill-health, hysteria, anxiety-states, and so forth, the student of psychology will find some of the chapters of considerable value as an introductory and critical study of various views which have been put forth as to the unconscious. Clear and interesting chapters, for example, deal with the theories of Janet, Freud, Jung, and Adler. While expounding and applying much of the Freudian psychology we note that the author makes some penetrating criticisms as to the Oedipus complex in early childhood. He points out, for example, that Anna Freud herself confesses that the theory as to such a complex is almost entirely hypothetical, a theory partly devised to explain some types of dreams of adults, and partly based on the analyses of neurotic types.

Latin: Its Place and Value in Education: By C. W. VALENTINE. (University of London Press. x+166 pp. 6s.)

This is a timely book, a book of which the world of education stands to-day in special need. For there is no topic which brings forth more wild assertions than the educational value of Latin—assertions based on traditional beliefs, on early memories, on the experiences of one or two persons particularly brilliant (or particularly stupid), on passionate conviction, on the authority of a great name, on anything and everything except psychological knowledge and scientific proof. Nor is it a question of merely theoretical importance; it vitally affects the practical interests of the pupils in all the secondary schools of the Kingdom. To take Latin, or to continue Latin, or to drop Latin, is a problem which confronts thousands of boys and girls at the beginning of every school year. And now that the School Certificate Examination is likely to be divorced from Matriculation, the problem is liable to arise in a still more acute form. There is therefore an urgent call for a book of this kind where the whole problem is discussed dispassionately, where both the pro-Latinists and the anti-Latinists are allowed to have their say, and where the author takes up the position not of an advocate but of a judge. For this task nobody could be better fitted than Professor Valentine. Having taught Latin himself, he is free from that contempt which, as Professor Mahaffy would say, is not of the kind which arises from familiarity. He is also a psychologist and knows how to deal with people who talk psychological nonsense—a pretty numerous class.

Specially are they prone to go astray on the question of formal discipline, a question which appears in many subtle guises. Here Professor Valentine's analysis and criticism are of great importance. For in spite of the negative evidence afforded by experiment, the persistence of the belief in the dogma of formal discipline is most extraordinary. More extraordinary still is the prevailing ignorance of the fact that the dogma has ever been challenged. As Professor Spearman has remarked,

the advocates of formal discipline have lost every battle, but have won the war. Whether they should have won the war is another matter.

The numerous claims made by the pro-Latinists are subjected by the author to rigorous examination, and where it is possible to concede their validity that concession is made. The only claim of importance that seems to have escaped the author's notice is that of Schopenhauer, who contends that the real aim in the study of Latin is to liberate thought from the shackles of language. He maintains that the structure of Latin is so different from that of English, and its idiom so alien, that in order to translate from one to the other it is necessary to disentangle the thought from the first before it can be embodied in the second. It thus serves to make thought independent of language. There is here, however, involved so contentious a doctrine of the relation between thought and language that Professor Valentine is probably well-advised in not referring to it. There are plenty of other doctrines, more widely held and more directly applicable to practice, which Professor Valentine has examined with care and perspicacity, and given their due value for pedagogical practice.

For practical issues are constantly kept in view. The conclusion arrived at is that Latin should be studied by far fewer pupils than now study the subject at our schools, and that when Latin is not taken at a public examination intended to test general culture, a higher standard should be required in other subjects, such as English and History, which provide an equivalent training in the humanities.

It is pleasant to note that Professor Valentine favours the study of Latin roots as more likely than a smattering of Latin grammar to benefit the course in English. The prejudice of the pedant against Latin roots is not easy to understand. Even D'Arcy Thompson (who was no pedant) said in his *Daydreams of a Schoolmaster*: "I heard, only a few days since, that our girls were fed on *Latin roots*! I asked through what process of cookery these roots might have passed. I was informed that they were invariably given raw . . . and my blood boiled within me, to think that such should be the dewless nurture of the sweet acorn-cups of future womanhood." His blood must have boiled at a very low temperature.

I have given but a slight indication of the rich contents of Professor Valentine's new book. P.B.B.

Memorandum on the Teaching of Geography: Issued by the Incorporated Association of Assistant Masters in Secondary Schools. (London: Geo. Philip and Son, 1935. 418 pp. 7s. 6d.)

This Memorandum, compiled by the I.A.A.M., is a clear and comprehensive statement of the position and scope of geography in secondary schools, together with the methods of approach in teaching the subject, the work in boys' schools being naturally the main consideration. There is evidence throughout of unsparing effort on the part of geography specialists to place before the less experienced the results of their work in order to help and stimulate effort in the teaching of a subject that is admittedly difficult.

The suggestions are characterized throughout by breadth of outlook and measured judgment. The variety in both the choice and presentation of material emphasize the fact that the teaching of geography cannot be stereotyped. Even with the school certificate examination in view, the arrangement of the syllabus and methods of teaching must clearly be affected by both personal and local considerations. The excellent chapter on Schemes of Work is clearly the result of this sorting and sifting in the light of experience. The development of the teaching of physical geography in the Regional Syllabus, and the somewhat difficult question of the treatment of the British Isles are considered. It is encouraging to notice the value attached to the study of the local region in all stages of the school course.

The very complete chapter on Teaching Methods is characterized by freshness and variety and the inexperienced teacher will be almost bewildered by the variety of methods by means of which material can be presented to a class. The "Lesson Unit," not always well considered, is analysed, and the incidental nature of much of the school work in geography recognized.

The writers do well to urge the exercise of discrimination in the use of the relief model. The value of the constant use of the globe is, however, perhaps not

sufficiently stressed, nor the necessity for the combined use of atlas and wall map. Discussions as to the relative value of these two pieces of apparatus are of little value. Both are necessary; the atlas for individual work and the wall map to clarify and correct and to focus the attention of the class.

The suggestions with regard to the use of the text-book are still, unfortunately, necessary. It is still necessary to state the fact that the text-book must be considered as a supplement, and not a substitute for oral teaching.

In view of the fact that post matriculation courses are now well established, the chapter on Sixth Form Geography, written in the light of recent experience, is both informative and helpful.

The criticism of the existing examination system, though in many respects sound, naturally emphasizes the teacher's point of view. With regard to the training of geography teachers, the statements made are probably over-generalized. In some, at any rate, of the University Training Departments, opportunity is given the student for teaching and observing, in different types of schools, and the teaching periods, if restricted in time, are made effective by group discussion and individual coaching.

A useful bibliography of publications dealing with teaching methods is included.

E.D.

An Introduction to Theory and Practice of Psychology: By LL. WYNN JONES. (Macmillan. 12s. 6d.)

The writer tells us in the Preface that this book is based on the system of the Nœgenetic School, and throughout most of the contents this influence is apparent and will be appreciated by many readers. It is only fair to the author, however, to state that he has not reserved his entire interest and approval for any one school of thought. He uses freely his knowledge of other authors and other schools, as well as the results of his own experience.

As an example of the thorough treatment to which many of the selected topics are subjected the consideration of imagery in Chapter V may be outlined thus: Experiments illustrating (*a*) sensory after-images, (*b*) spontaneous memory images, (*c*) voluntary memory images, (*d*) eidetic images, are described, well-documented discussion of these forms of imagery follows, and a short section on imagery and literary appreciation (also adequately documented) is added. Four relevant questions are then provided, and eleven general references to the subject completes the chapter.

There are twenty-four chapters altogether: the first is introductory, the twenty-third and twenty-fourth deal respectively with statistical and psychological methods. An underlying principle is that "experimental psychology" without theory is "futile" and "general psychology without experiment is sterile," so the book is to serve as an introduction to both the theory and practice of modern psychology.

Many of the experiments described or suggested can be taken with children as well as with adults, and most can be performed without expensive apparatus. Topics considered too advanced for an introductory course have been omitted. This does not necessarily mean that the book is suitable to be put into the hands of beginners for them to work out their own psychological salvation. It may be suggested that the wealth of ungraded references and suggestions and the mixture of theory and practice tend to give a result which from the beginner's point of view might easily seem "scrappy" and bewildering. As to the value of the book to teachers of psychology and to advanced students, there seems to be no room whatever for doubt: it is invaluable.

Computing Diagrams for the Tetrachoric Correlation Coefficient: By LEONE CHESIRE, MILTON SAFFIR, and L. L. THURSTONE. (Distributed by the University of Chicago Bookstore. 58 pp. 1933.)

The senior author, Professor Thurstone of Chicago, has recently developed multiple factor methods suitable for the study of the product moment intercorrelations of psychological traits. But there occur problems where only judgments

of mere presence or absence of traits are available and, if these traits are normally distributed, it may be legitimate to use the tetrachoric coefficients developed by Pearson.

The present study contains forty-six computing diagrams (one for each value of one independent variable from .05 to .50 inclusive insteps of .01) which have been empirically constructed according to an ingenious procedure so that an investigator is enabled to determine the tetrachoric coefficient for a four-fold table by inspection. Even if there are fifty traits under consideration, it is thus feasible to apply multiple factor methods, as the diagrams represent a great saving of time and labour even when compared with the facilitating tables prepared by Pearson and his students, provided the data do not justify the calculation of the tetrachoric coefficients to two decimal places. This, of course, is usually the case on account of the large size of the probable errors. There is no indication of the price of the booklet, but its use should greatly facilitate the study of those problems for which it is intended.

LL.W.J.

Some Methods in Health Education: By M. B. DAVIES and L. WILKES. (Longmans, Green and Co., Ltd. 2s. 6d.)

This valuable little book puts forward in a concise form suggestions in the teaching of health education from the nursing school to the post-primary school age. It discusses the aims and values of Health Education—the content of the course, some methods in teaching, and also many teaching aids in Health Education. It pre-supposes some knowledge in hygiene, anatomy, physiology, and biology. The book endeavours to show, in the words of the author's preface, that "the same principles of psychology and education underlie this teaching of health as are implicit in the methods of all school subjects." It is a book that should be read by all those who train the school teacher in the subjects commonly embraced by the word hygiene or health education, and also by all those who are already teaching this subject in schools. It will give much food for thought in preparing plans for teaching this subject and it is a book that is badly needed at the moment, when the health and fitness of the nation is so much in the public eye.

M.E.H.

Report of the Twenty-third Annual Conference of Educational Associations. (392 pp. Price 4s. 6d., from the Conference Secretary, Miss M. A. Challen, 29, Gordon Square, London, W.C.1.)

The Conference was held as usual at University College, London, presided over by the Marquess of Lothian, whose presidential address was on "Liberty and Collectivism." It is impossible in a brief review even to refer to the many and varied topics dealt with at the Conference. Some of the reports are very brief, others much fuller. Of especial interest from the psychological point of view are Professor Flugell's "Asceticism and Education," the Dean of St. Paul's brief address on "Psychology and the Religion of the Future," Professor Drever's "Reflections on the Scottish Mental Survey," and Professor Pear's "Training for Discussion." The Society for Research in Education dealt with an important topic—"Religion and the Public School," but one fails to find much evidence of research. When there are so many societies for different purposes, it is regrettable if each does not carry out its primary function. The Conference, however, is one for discussion and it is a particularly good characteristic of this annual report that even the brief remarks of those who join in the discussion are nearly always adequately recorded.

Careers and Openings for Women: By RAY STRACHEY. (Faber and Faber. 7s. 6d.)

This book provides not only a most useful compilation of information about careers and openings, but also sound and sane ideas on the subject of employment, such ideas indeed as one might expect from the author.

The first part is a survey of women's employment. The four chapters deal with the need for women to work, and the opportunities, difficulties and rewards

of women's work. In the second part is set forth clearly and concisely information about the field of employment for girls of different ages from fourteen years to post-graduate age, and we are given a general idea of the various available careers and the special training necessary for them. In the final chapter " How to Decide " some useful advice is given which is good so far as it goes, but it unfortunately does not go very far. It would have been immensely improved if the author had referred to modern researches which show how careers should and should not be chosen and, in particular, the very valuable work being done by the National Institute of Industrial Psychology. If a girl cannot choose a career for which she is specially suited, at least she can be helped by expert advice to choose a second or third best and she can be headed off those careers for which, after examination, she is found to be definitely unsuited intellectually, temperamentally or even physically.

Appendix IV is a useful classified Bibliography.

Nursery Schools in Italy : By GIUSEPPE LOMBARDO-RADICE. (Allen and Unwin. 196 pp. 6s.)

This book will, with its interesting account of methods which have been in use in certain Italian schools since 1898, remind readers that much we hail as new is really very old : and the novelty lies only in our belated realization of its excellence.

These schools that Professor Lombardo-Radice describes are the forerunners of the best type of infant and nursery schools. In them the children learn by activity, and by taking an intelligent part in the little life of school. Moreover, the schools are not closed places, but open naturally in the world about them. There are pets, gardens and much play in the open air ; and the brighter Italian climate make such activity pleasant and natural. The records of the school work contain many interesting suggestions for the use of anyone engaged in such teaching. M.S.

Art in Daily Life : By D. D. SAWER. (B. T. Batsford, Ltd. 210 pp. 10s. 6d.)

This volume, planned as a companion and sequel to *Everyday Art at Schoo l and Home*, and intended for the study of both young and old, deals adroitly with many aspects of art and craftwork.

Miss Sawer has given a valuable contribution from an original and joyous standpoint to the elucidation of many problems that beset the path of the novice. Teachers will find her book, obviously the fruit of many years' experience in both teaching and professional practice, a valuable help.

Illustrations, historical and modern, are well chosen, and form progressive suggestions for the development of self-expression and appreciation.

W.E.C.

Studies in Education : Abstracts of Papers at the Cleveland Meeting of the National Society of College Teachers of Education, U.S.A., 1934. (Univ. Chicago Press. 50 cents. 68 pp.)

This Conference was one held in conjunction with the American Association of Teachers' Colleges.

The present booklet gives a résumé of the addresses and of many of the contributions to the discussions.

The general theme of the conference was the improving of the training of teachers, and many of these brief outlines are of interest to those in such work not only in America but elsewhere, though the extreme brevity of the outlines of course lessens their usefulness.

The Teaching of Needlework : By D. HOWLETT. (University Tutorial Press. 86 pp. 3s. 6d.)

This book is an excellent text-book for the Training College student or the young teacher seeking practical help and inspiration. It is well produced and printed, and the illustrations and stitches and processes are good.

Die Irrtuemer der Psychoanalyse: By HENRIK EGYEDI. Wien und Leipzig: W. Braumueller, 1933. Rm. 2.80.

Egyedi shares Freud's hypothesis that every mental event is determined, but he does not acknowledge Freud's postulate that every mental event can and has to be explained. He admits that emotions remain active after being inhibited from becoming conscious; he admits further that the psychoanalytic attempt to determime mental reasons for pathological symptoms represents progress in psycho-pathological diagnosis; he appreciates the method of free association, and he emphasizes its effect on the conversion of character, to which he thinks half the therapeutic success of psycho-analysis is due. The other half he believes to be the effect of suggestion of the almost hypnotic relation between patient and psycho-analyst. The opinion that there is an effect other than suggestive in this method, the hypothesis of the so-called "Uebertragung" he thinks to be a mistake. All the patient says and does is said to be entirely due to the psycho-analyst's suggestion and to nothing else. The inspired basis of psycho-analysis is, according to Egyedi, the method of free association which, in connection with suggestion, is able to forward psycho-therapy.

The author, trying to be fair towards Freud's personality, quotes several sentences out of the panegyric by Stefan Zweig: but, on the other hand, he says Freud is so obsessed by his ideas as not to be able to treat phenomena with common sense. Egyedi himself has produced neither an original criticism nor theory of his own. O.M.

Geistesformung: Beitraege zur experimentellen Erforschung der formalen Bildung: By DR. JAIME CASTIELLO. Berlin und Bonn, F. Duemmlers Verlag, 1934. Rm. 5.80.

The first part of the book contains a review of more than ninety English, American and German works published since 1890, most of which deal with experimental investigation of the so-called "formal training" (formale Bildung). In most of these works a general improvement of mental function resulting from formal training has been found. It is due, however, to either a method of thinking or an ideal or a specific attitude acquired by special training in one field. The intelligent pupil gets at it for himself, though the teacher may also lead the attention towards this point; practice is essential; but mechanical training or drilling is as useless and disadvantageous as merely talking about the ideal.

In two other parts of the book the author reports his own investigations. The first deals with the influence which three different German school types have on the way of thinking. These schools are the "humanistisches Gymnasium," in which the classics form the centre of education; the "Realgymnasium," in which mathematics and science, French and English, are taught mainly, but Latin is also included in the curriculum; and the "Oberrealschule," which has no Latin lessons but lays stress solely on mathematics, science and modern languages. The author asks the boys questions on ten fundamental points in different fields of art and science, history, sociology etc. The answers to the questions do not require but they show whether the pupil understands the met he different topics. Castiello finds that the boy who i knows better how to deal with a logical question than one less well trained; that training in science has a specific influence on the relation to realities, on the observing and on the kinds of interest in other fields. So he arrives at the conclusion that each type of school creates a specific attitude, specific interests and abilities; but he himself admits that this statement is not to be generalised, as he has studied only the boys in one class in one school of each type. And it must be added that his method of interpretation is controversial and so are several of the answers—for example, that about the definition of a natural law is obviously due to the lessons and not to the boys' actual thinking.

In a third part of his book Castiello tries to ascertain the educational influence of handicraft lessons (Werkunterricht). As he has observed, only eight boys (thirteen years old) attended handicraft lessons twice or three times a week during the time of the investigation from November until March, with a three weeks' interval about Christmas, and it is not possible to generalise from his conclusions. Castiello found that concentration and exactness of working and observation are limited to the particular craft and the training has no influence on the boys' attitude and work in the school lessons. Actually, the contrary result is to be expected if the lessons on handicraft begin at an earlier age and last longer. The author is not as critical about his own methods and conclusions as he is about others'; so the main value of the book lies in the first part, in the review; the other parts are only useful and interesting as a stimulation to further investigation. O.M.

FOREIGN JOURNALS.

Zeitschrift für Pädagogische Psychologie und Jugendkunde: 36 Jahrgang, Nr. 5-6. May-June, 1935.

Helmuth Bogen writes from experience on the psychology of vocational advice, and almost as much on the mind of the adviser as of the advised. Illustrative cases are considered, the self-absorbed, the reserved, the conceited, and others who set difficult problems to their interviewers.

Reichsminister Rust, Minister of Education, has issued an edict on the selection of scholars for higher schools, no longer to be based on a one-sided preference for those intellectually precocious, but taking account also of physical fitness, of character, of race. The criteria to be applied for the selection of the well-endowed are negative in character, e.g., the exclusion of those with severe physical handicaps, the carriers of hereditary diseases, those shy of physical exercise, those unready to endure hardness, offenders against custom and decorum, persistent offenders against comradeship and communal feeling, persistent rebels against training, order and respectfulness. There must be no favouritism of non-Aryans, and those who repeatedly offend against the state or community are to be dismissed.